ELECTRICAL WORLD

A consolidation of Electrical World, Electrical Engineer and American Electrician

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What in the World!

Conforming with an old publishing custom, initiated during the days of N.E.L.A., this issue of Electrical World was in the mails,on its way to you, the day after the E.E.I. convention in Chicago closed. It contains all the news of the meeting including that of the final session.

●

Convention in Chicago. Publishing in New York. Editors in both places. Air mails and telegraph link the staff. Into the morning hours we go that you may have the news of the industry's own convention promptly.

●

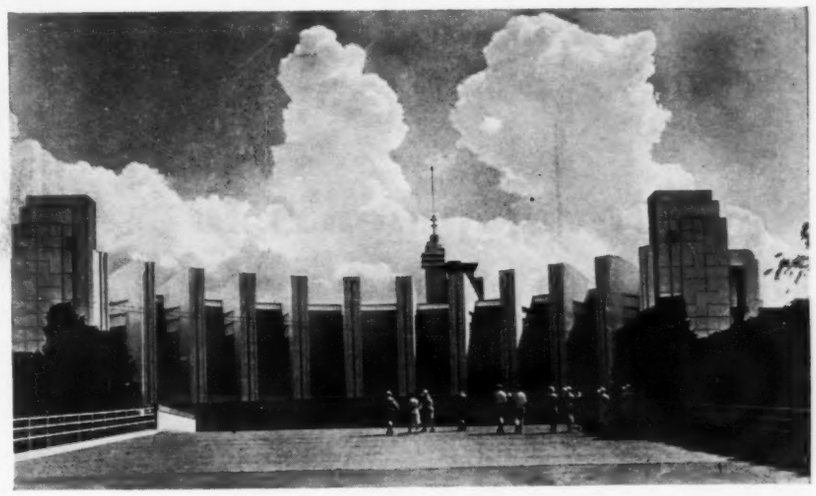
You would, will, or perhaps did, like the Fair. Invigorating as a fresh breeze or a new idea, it stimulates with color, architecture, light and confidence even those who are dismayed by the precipitous course of the world we live in, headed irresolutely for Heaven or Hell.

●

Never before have the display and emotional possibilities of lighting been so skillfully developed on so large a scale. Modernism in architecture and decoration has been advanced many years by the Century of Progress Exposition.

●

Of greatest interest perhaps to electrical industry men is "Electricity at Work"—a tremendous spectacle illustrative of the development and progress of the art of generation and distribution of energy as well as its application to the needs and tasks and pleasures of mankind. Otherwise unemployed engineers devised an absorbingly interesting display.



North Entrance Hall of Science—Century of Progress Exposition

JUNE 10, 1933

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ELECTRICAL WORLD

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for the Week Ending

June 10, 1933

Congress Delays Action on Federal Tax

THOUGH Senate and House of Representative conferees agreed last week to forget all that had elapsed in the way of discussion and proposals in connection with the shift of the federal energy tax of 3 per cent from consumer to producer (ELECTRICAL WORLD, June 3, page 705) and to transfer it directly, no enabling action had been taken by Congress at the time of going to press.

Speculation upon the probable effect of the shift upon utility operating and holding company revenues has been widespread. Estimates by financial observers have placed the cut in net income available for junior issues at 10 to 35 per cent. Some place the penalty against proprietorship at 3 cents to $1.07 a share. Little has been said, however, about the effect upon the rate situation. Voluntary reductions in the future will be more difficult for management to justify when earnings are sliced so heavily by taxation.

Dividend tax proposed

Seething with resentment induced by the probably wholly legal actions of the Morgan group, which have nevertheless been fanned into popular discredit by the scandal sheets, Congress has sharply altered its taxation plans. Capital gains and loss provisions of the income tax law are due for change. Inclusion of a levy upon dividends upon stocks, already taxed as corporation revenue, is discussed. This tax would be at 5 per cent of the amount of the dividend and would be payable at the source. It has been assailed as unsound.

▼

Shoals Project Under Way

With more than 100 surveyors engaged in running out the flowage lines that will mark the boundaries of the big reservoir on the Clinch and Powell Rivers, work on the building of Cove Creek Dam has begun. The dam 225 ft. high and backing up water in a reservoir of 83 square miles, is to be the key to flood control, navigation and power development of the Tennessee Valley.

▼

Edison Electric Institute Meets in Chicago

This week, amid the splendors that are the Century of Progress Exposition, the Edison Electric Institute, successor to the National Electric Light Association, held its first annual convention in Chicago. This issue of "Electrical World" is devoted largely to a report of the meeting, presentation of excerpts from the more significant addresses and recording of convention discussions.

▼

Complainants Would Reopen Case in Labor Hearing

Though counsel for the Brooklyn Edison Company filed briefs as requested by the New York Public Service Commission in the revolutionary acceptance of authority in labor matters by that regulatory body (ELECTRICAL WORLD, April 1, page 403), protesting interests have failed to do so. It is the plea of Jerome Count, attorney for the complainants, that the commission have the company furnish data relating either to the transfer or discharge of employees since January, 1931.

"With such information," declared Mr. Count, "it would be possible to cite specific cases of abuse and demonstrate their relation to service and rates without jeopardizing any employee's position with the company.

"All that the complaint itself said about rates," the company's brief states, "was that the company had effected an annual saving of $7,500,000 in wages, 'while rates remain at the same excessive levels as prevailed prior to such savings.' All that the complaint said about service was that the acts complained of 'endanger the continuity of service and the adequacy thereof.' It now appears that the assertion of the complaint as to service being endangered was wholly without foundation and was made recklessly in the hope that some might turn up to support it."

▼

Commission Reform Bill Approved by Pinchot

Much to the open disgust of the so-called liberal element in Pennsylvania, Governor Pinchot has signed the bill of Senator McClure providing for control of utility holding companies, their securities and other functions by the state Public Service Commission. Governor Pinchot but a day or so previous vetoed the bill offered by Senator McClure providing for a continuance of the investigation, under way for some months by the Pennsylvania Senate, of the regulatory body (ELECTRICAL WORLD, page 740).

"A first feeble step in the right direction of absolutely necessary legislation," said the Governor in affixing his signature and taking no pains to conceal his estimate of the measure's inadequacy. "This bill is a miserable excuse."

"There are two features of the bill which moved me to sign it, and only two." The first one has to do with the return through group action of consumers of charges previously collected by utilities pending rate litigation. The other precludes a discontinuance of service by a utility for an unpaid and due balance on the time-purchase of appliances.

Insull Successor Company Fought

LEGALITY of the Penn Southern Power Company, to be formed by order of Irwin Kurtz, federal bankruptcy referee, to hold five of the operating companies in the Eastern Insull group for the benefit of creditors (ELECTRICAL WORLD, May 13, page 569), was questioned in New York last week by Federal District Judge Alfred C. Coxe. The referee's order creating the Penn Southern Power Company was brought before Judge Coxe for review by Robert Starr, counsel for the Utilities Power & Light Corporation, a $4,215,000 creditor of the bankrupt National Public Service Corporation. The arrangement whereby five operating companies — Tidewater Power, Florida Power, Georgia Power & Light, Penn Central Light & Power and Michigan Electric Power—were removed from the assets of the National Electric Power Company, National Public Service Corporation, Seaboard Public Service Corporation and Electric Management & Engineering Corporation, all bankrupt, was defended by Edward L. Williams, counsel, who negotiated it for the Irving Trust Company, as trustee in bankruptcy for the four Insull key organizations.

Penn Southern plans

Mr. Williams said the new Penn Southern Power Company would be formed to hold stocks of operating companies now held by the New York Trust Company and the Chemical Bank as collateral for loans made to the bankrupt National Electric Power Company and its bankrupt subholding companies, under terms which are now the subject of intercompany and pledge claims and counter-claims. In exchange for the surrender of the operating company stocks by the banks and their provision of $750,000 of new money for the conduct of the Penn Southern Power Company, which was to control the operating companies, the banks were to receive under Referee Kurtz's order an equivalent amount of income bonds of the new company and a bonus of a 20 per cent common-stock participation, while a voting-trust agreement was drawn to insure sound management. The remaining 80 per cent of the common stock was to be turned over to the Irving Trust Company to be divided, 63 per cent to the bankrupt estate of the National Electric Power Company and 17 per cent to the bankrupt estate of the Seaboard Public Service Corporation. The two other bankrupts, the National Public Service and the Electric Management & Engineering Corporation, for which the Irving Trust Company was simultaneously trustee in bankruptcy, received none of it.

Mr. Williams accused Mr. Starr of deliberate delay in the interests of the Utilities Power & Light Corporation, which he declared to be "in substantial competition with these companies."

Lindley denounces gas plan

A plan to reorganize another Insull subsidiary, the Southern United Gas Company, that involved the payment of 51 per cent of the common stock as a bonus to the reorganizer, was denounced as "nefarious" by Federal Judge Walter C. Lindley in Chicago. The plan was presented by the committee headed by Clarence I. Worcester of Philadelphia at the hearing on reorganization of three Insull subsidiaries, the United Public Service Company, United Public Utilities Company and Southern United Company.

Fight to quash indictments

In the meantime, arguments have been begun on the defense motion to quash the indictments against nineteen defendants charged with using the mails to defraud in connection with the collapse of the Corporation Securities Company of Chicago. Among those under indictment are Samuel Insull, his son, Samuel, Jr.; his brother, Martin; Stanley Field, formerly chairman of the board of the Continental Illinois National Bank & Trust Company, and Harry L. Stuart, head of Halsey, Stuart & Company. Amos C. Miller, representing Mr. Stuart and three other officials of his company, attacked the indictment as vague, insufficient and as failing to apprise the defendants of the charge against them. Commenting on the indictment, Judge Wilkerson said: "I would suppose that this is a good indictment. If your motion is overruled you might obtain a bill of particulars."

Rumors that the Department of Justice was considering new indictments against Samuel Insull have not been officially confirmed.

▼

Winnipeg Receiver Asked; Provincial Law Questioned

At a meeting held in Montreal last week the protective committee of bondholders of Northwestern Power Company was given authority to apply for a receiving order in bankruptcy against the Winnipeg Electric Company as guarantor of the principal and interest of its bonds. A committee reported receivership the most logical step to bring about a reorganization plan and to protect the rights of bondholders. At the present time Winnipeg Electric as guarantor of the principal and interest to the Northwestern Power 6 per cent first mortgage bonds, of which there are $10,000,000 outstanding, is in default. The situation is held uncomplicated by the recent action of the Manitoba Legislature giving authority to the Municipal and Public Utility Board to stay actions and proceedings against public utilities and their property. It is reported that counsel for the committee considers that the provincial act could not over-ride the bankruptcy laws of the Dominion.

▼

Few Light and Power Issues Among New Bond Defaults

For the month ended May 15 new defaults in electric light and power bonds totaled only $25,878,500 out of a total of $357,371,830 for defaults in all groups, including public utility, railroad, industrial and real estate issues. To this sum Southern Cities Public Service Company contributed $17,363,500 — a holding company, the operating subsidiaries of which supply manufactured and natural gas with the exception of one small electric light and power property operating in St. Marys, Ga.

Other companies that have defaulted are the Arizona Power Company, a unit of the United Gas Improvement System, to the amount of $2,753,500; the Broad River Power Company, Associated Gas & Electric System, to the amount of $1,094,500; Florida Public Service Company, also a unit in the Associated system, to the amount of $3,340,400, and the Inland Power & Light, Insull system, to the amount of $1,326,600. Arizona Power was the only company that defaulted as to principal.

▼

Brawley (Calif.) Municipal

Voters of Brawley, Calif., at a special election have approved the City Council's proposal for establishment of a municipal light and power plant to cost approximately $500,000. The city now receives electric service from the Southern Sierras Power Company. The vote was 901 to 465. The city proposes construction of a Diesel engine power plant to be paid for out of income. Brawley is the first Imperial Valley town to enter upon a municipal electric plant program.

▼

American G. & E. Reports

Increased surplus is reported by American Gas & Electric Company for 1932, being $59,726,119, comparing with $56,290,834 at the end of 1931. Cash and time deposits were $22,635,926, against $19,508,751 in the preceding year. "The company has no floating debt other than for current accounts not due and unadjusted tax items," George N. Tidd, president, stated. "The company's subsidiaries have no floating debt except for advances of parent companies to sub-

sidiaries and except for accounts not due and unadjusted tax items. With the exception of $8,000 of bonds of one of the subsidiaries falling due serially in 1933, 1934 and 1935, there are no bonds of either the company or any of its subsidiaries maturing before 1936."

▼

N.F.P.A. Refers Code Changes to Board of Directors

Meeting in Milwaukee, Wis., last week the National Fire Protection Association considered a number of topics relating to safety of plant equipment and the facilities for providing service to the consumer. A. R. Small, chairman of the electrical committee, presented his report and recommendations in connection with proposed code changes and this was referred with little discussion at this meeting to the meeting of the board of directors, June 26, for action as to actual changes in the code.

There was also referred to the board of directors a motion by L. F. Adams of the National Electrical Manufacturers' Association proposing amendment of sub-paragraph 1 of proposed new paragraph (a) of Section 804 so as to omit the requirement that non-tamperable plug fuses shall fit in the existing standard Edison plug cutout bases when an adapter is not used.

A complete revision of the regulations for carbon dioxide fire extinguishing systems was also presented to the association. No fundamental change in the type of protection specified is planned.

Speculative Rise Continues

Nothing else is quite so important at the moment as the final terms and implications of the industry recovery act. Nothing is more certain than that the Administration will be less than satisfied with any code of practices which fails to provide a minimum wage, definite short-hour schedules of operations and positive, increased power of labor in return for the anti-trust freedom of industry. Cotton goods manufacturers have estimated that the introduction of a two-shift, 40-hour week in their field would mean a 35 per cent mark-up over the price rise which has already taken place.

One of the little jokes of the Great Illusion is that, with all the hullabaloo over higher prices, notably for the farmer, so far only speculators can have made any money out of it all. Farmers do not hold their produce for later sale. It is the speculator whose warehouse receipts yield profits.

One wonders just how far the American people have traveled along the trail with their leaders. Says Donald Richberg, a framer of the industrial recovery act and one of those slated to shape its enforcement: "Industries should be maintained primarily for the purpose of providing a livelihood for those who work in them."

This week: Automobile production holds its own, dropping somewhat with the holiday, but is still above the figures for a year ago; car loadings up slightly; general business indexes show rise for tenth consecutive week and are now at levels of September, 1931; steel production, at 44 per cent, approximates May, 1931, levels, and electric power production, following the holiday influence, drops but slightly. Prices surge upward once more, stocks, bonds and commodities continuing to display notable strength.

Light Indicators at the Races

Four electrically operated indicator boards, employing the use of 10,276 bulbs, will be constructed at Arlington Park, Chicago, in connection with the $250,000 totalizer now being installed. Odds on the various horses may be displayed instantaneously on these indicator boards, which are connected by cables with electrically operated calculating machines, which, in turn, are hooked up with the ticket issuers. A group of twenty-four bulbs is capable of forming the numerals from zero to nine as desired. These numerals not only can be changed at speeds greater than the human eye can follow, but possess no inertia, stop at any desired point instantly and may be read clearly at great distances and in any light.

▼

A.I.E.E. Coast Meeting Off

Tentative plans for the annual Pacific Coast convention of the American Institute of Electrical Engineers have been canceled. It is announced that the meeting, originally scheduled for Salt Lake City, Utah, September 4-8 of this year, will probably be held in that city in a corresponding period of 1934.

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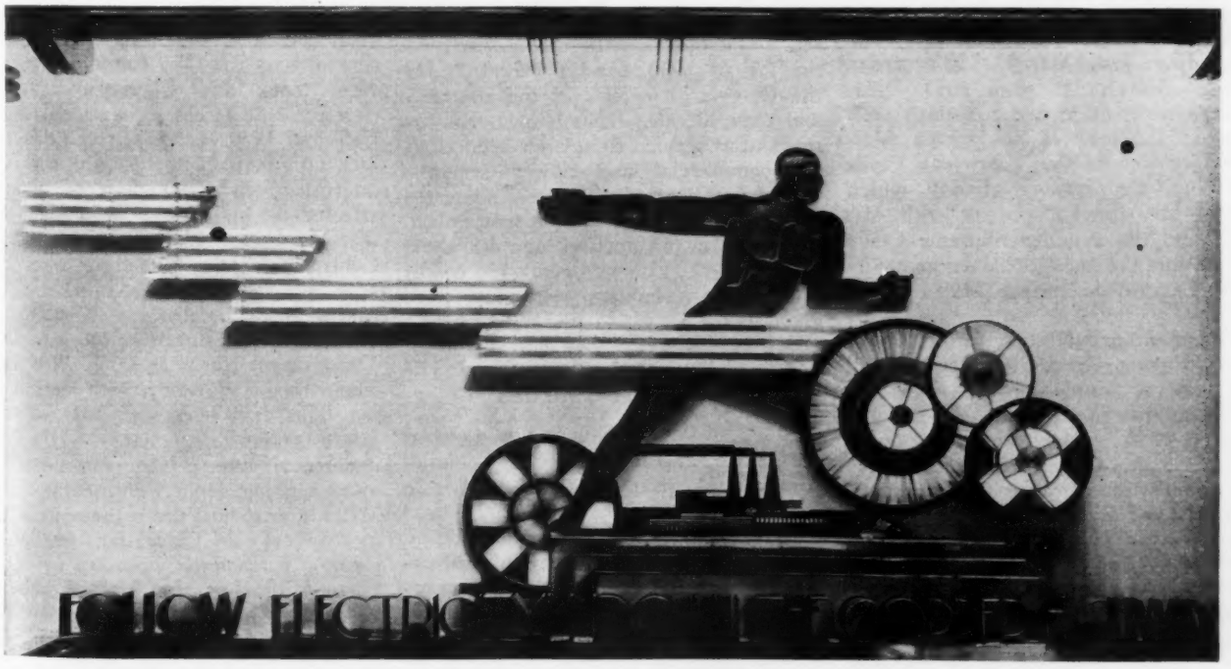


ON TO THE FAIR—At the entrance to "Electricity at Work" in the Century of Progress Exposition stands this dynamic concept of a 1933 invitation to the central-station exhibit. Flashing lights and whirling wheels of color bid the visitor "Follow Electricity Down the Copper Highway."

Coming Meetings

Canadian Electrical Association — Lucerne-in-Quebec, June 14-16, B. C. Fairchild, Power Building, Montreal, Que.

American Foundrymen's Association — Chicago, Ill., June 19-24. C. E. Hoyt, 222 W. Adams St., Chicago.

American Physical Society — Chicago, Ill., June 19-24. W. L. Severinghaus, Columbia University, New York.

American Society of Agricultural Engineers—Rural electric sessions, Lafayette, Ind., June 22-23. T. E. Hienton, West Lafayette, Ind.

American Institute of Electrical Engineers—Summer convention, Chicago, Ill., June 26-30. H. H. Henline, 33 West 39th St., New York.

American Society of Mechanical Engineers—Chicago, Ill., June 26-30. C. W. Rice, 29 West 39th St., New York.

American Society for Testing Materials—Chicago, Ill., June 26-30. C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Engineers' Day, Century of Progress Exposition—Chicago, Ill., June 28, G. E. Pfisterer, 308 West Washington St., Chicago.

Illuminating Engineering Society—Delavan, Wis., August 28-31. D. W. Atwater, 29 West 39th St., New York.

International Association of Electrical Inspectors—Chicago, Ill., September 11-15. V. H. Tousley, 612 No. Michigan Avenue, Chicago.

▼

Pinchot Vetoes McClure Bill; Calls Senate Insincere

Maintaining that the Senate committee investigating the Public Service Commission and the public utilities is not sincere, Governor Pinchot last week vetoed the bill of Senator McClure of Delaware County providing for $100,000 for a continuance of the inquiry. Before vetoing the measure the Governor conferred with Oliver K. Eaton, formerly counsel of the committee, who resigned in protest against the method in which the McClure committee was proceeding last March (ELECTRICAL WORLD, March 11, page 305). Mr. Eaton's resignation and his clash with Senator McClure resulted from testimony by Commission Chairman Clyde L. King, the same testimony which caused Mr. Pinchot's break with Mr. King and the pending Supreme Court suit to oust the man he named as chairman (ELECTRICAL WORLD, May 13, page 595).

The main ground upon which Governor Pinchot vetoed the McClure bill was that the Senate was not sincere in adopting the resolution of Senator Chauncey W. Parkinson, postponing action of the Governor's nominees to the commission because the investigation was still under way. "I have been vigorously in favor of a real investigation of the Public Service Commission and its past relations with the public utilities," the Governor wrote in his veto. "If there were any prospect of having a real investigation by the commission named in this bill I should approve it with great enthusiasm. That resolution was a fraud and a sham. It is well known that there are no charges pending against any of my appointees to the commission and that the investigation has nothing whatever to do with the confirmation or rejection of the commissioners serving under appointments from me. . . .

"But for the fact that this committee proposes to make a substantial expenditure, I should approve this resolution in any event and let the committee answer to the people for its conduct, but I can see no advantage whatever for squandering $100,000 or any part of it on something which will bring no benefit whatever to the state."

▼

New Electrification Plan for Italian Railways

Completion of plans for a twelve-year undertaking to include 2,740 miles of line brings Italy's railway electrification to a revival.

Included in the work is the electrification of the important Milan north-south line as far as Reggio de Calabria and also the Turin-Trieste line and the sections of the system connecting Italy with Switzerland and Austria. The new electrification scheme will necessitate the erection of several additional electric power stations.

▼

Oregon Order Withdrawn

Withdrawal of orders pertaining to the valuation and rates of the Northwestern Electric Company, Portland, has been made by Charles M. Thomas, one-man utility commission of Oregon. A date for continuation of the hearing has been set. The orders withdrawn, issued in the fall of 1930, fixed a valuation for the Oregon properties of the company and reduced rates from 16 per cent for residential service to smaller reductions for commercial and power services. The orders were immediately contested in the federal court as confiscatory and a temporary injunction against them was allowed. Changed economic conditions and incomplete testimony were given as the reason for the withdrawal.

▼

Rural Line Order Contested

Conowingo Power Company has notified the Maryland Public Service Commission, on the grounds that the order is unjust, unwarranted, unreasonable and unlawful, it will not accept and abide by an order handed down by the commission on May 17 holding that the company could not require patrons at Old Field Point to make special payments to the company for running a line to the community after these payments had been in force for three years from the date the contracts were signed.

Eaton Stocks to Be Sold; Head Fights Bank Plan

Announcement has been made that on June 12 the greater part of the assets of Continental Shares, Inc., the holding-investment company through which Cyrus S. Eaton of Cleveland held a dominating position in the public utility, steel, rubber and newsprint industries, will be auctioned in New York by the Chase National Bank. These assets had been deposited as collateral for heavy loans made to the trust in 1931, when the climax was reached in the company's affairs. The collateral held by Chase National comprises approximately 60 per cent of the assets of the corporation, which at one time attained a book value exceeding $187,000,000, but which amounted to $44,491,577 at the end of 1932. At that time investments were listed at $134,000,000, but were brought down to $38,304,000 by appropriations from reserves. There was $41,475,000 of notes payable, and the deficit of $51,266,428 exceeded by several million dollars the value of all stocks held.

Besides including working control of the United Light & Power Company, one of the larger public utility holding companies, the collateral to be sold represents powerful interests in many leading tire and rubber companies and large blocks of stocks in several steel companies. The bank is asking minimum prices of about $18,170,000 for the collateral to be auctioned. Stocks will be sold in blocks of 10,000 shares or less.

Related to Insull case

Continental Shares was organized in 1926 as an investment trust-holding company by the Otis-Eaton interests of New York and Cleveland. In the course of his big operations during 1929 and 1930 Mr. Eaton came in conflict with Bethlehem Steel and the Insull interests, both of which were seriously affected by his coups. It was in 1931 that Mr. Eaton resigned as chairman of Continental Shares and from other business positions of prominence after having spent his entire personal fortune in successfully fighting the merger of Youngstown Sheet & Tube with Bethlehem Steel. Before it was certain that the fight had been won Mr. Eaton's interests began to collapse. His banking firm of Otis & Company closed and upon retiring from Continental Shares Mr. Eaton turned the management over to bankers in Cleveland, headed by George T. Bishop.

Opposition to the sale of the collateral by Chase National has developed in Cleveland, where stockholders have begun to organize a committee to appeal to the bank to defer the selling of the collateral as, with the stock market booming, the value of the collateral is

increasing daily. Mr. Bishop, who started for New York to confer with bankers regarding the situation, expressed the hope that the proposed sale could be prevented.

▼

Commonwealth & Southern Earns 12 Cents on Common

(Year ended December 31, 1932)
(Consolidated Statement)

Earnings

Gross earnings	$114,513,921
	11.9% below 1931
Net earnings	$53,095,669
	11.8% below 1931
Balance available for common stock	$4,247,694
	68.0% below 1931
Earnings per share	0.12
	in 1931, 0.40

Balance Sheet

		Compared with 1931, Per Cent
Plant and property	$1,044,303,751	—0.6
Investments (book value)	$ 11,210,594	—0.6
Current assets	$ 61,317,309	—11.7
Current liabilities	$ 20,797,216	—24.9
Funded debt	$ 494,244,900	—0.2
Reserves and surpluses	$ 68,227,793	—7.2

Dividend of 15 cents per share for the six months ended March 1, 1932, was paid on that date to common-stockholders of record February 5, 1932. No further action was taken on common-stock dividends during the remainder of the year.

▼

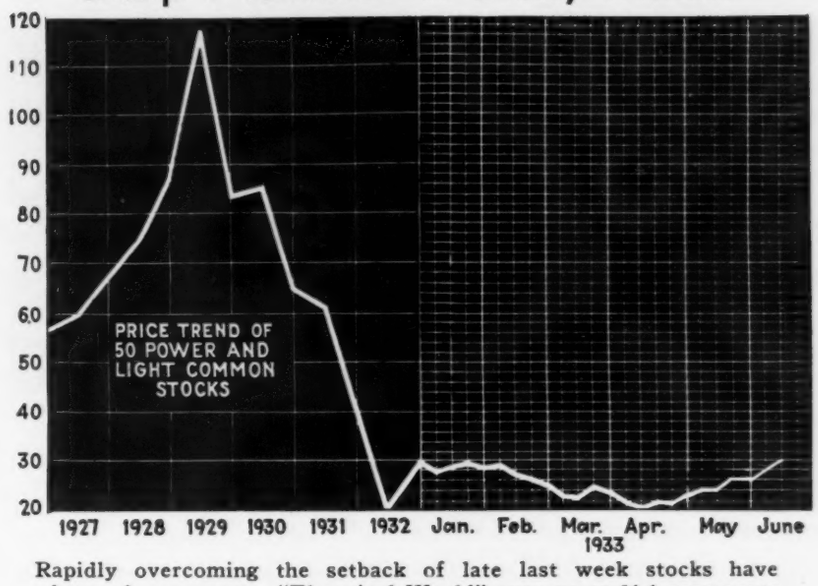
Associated Debenture Plan Meets Further Opposition

Though Associated Gas & Electric Company officially pronounces opposition to its debenture plan for reorganization (ELECTRICAL WORLD, June 3, page 706) to be "based on an entire misapprehension of the facts and a lack of comprehension of the plan itself" malcontents continue to appear.

Mrs. Elizabeth E. Rabenold, wife of New York State Senator Rabenold and holder of $165,000 of the 4½ per cent debentures of Associated, has entered suit in the state Supreme Court, charging the plan to be illegal and alleging transfer of assets by the company following her acquisition of the securities. It is stated in the complaint that the plan is intended to benefit the directors who own, directly or indirectly, the controlling stock of the parent company, rather than the debenture holders.

The company asserts that allegations as to diversion of earnings of the operating company by those in control to be "absolutely untrue, as has been demonstrated to the satisfaction of the court in several previous suits." The company said there could be no such diversion of earnings because the corporations performing management and construction services are 100 per cent subsidiaries of the company.

Sharp Advance in Utility Stocks



Rapidly overcoming the setback of late last week stocks have advanced once more. "Electrical World" average at 31.1 represents year's peak; highest since last October.

▼

Standard Gas Cuts Capitalization

Stockholders of the Standard Gas & Electric Company have authorized a reduction of capital from $223,880,665 to $108,897,013 by lowering the amount of capital represented by the common stock of no par value from $136,609,722 to $21,626,070.

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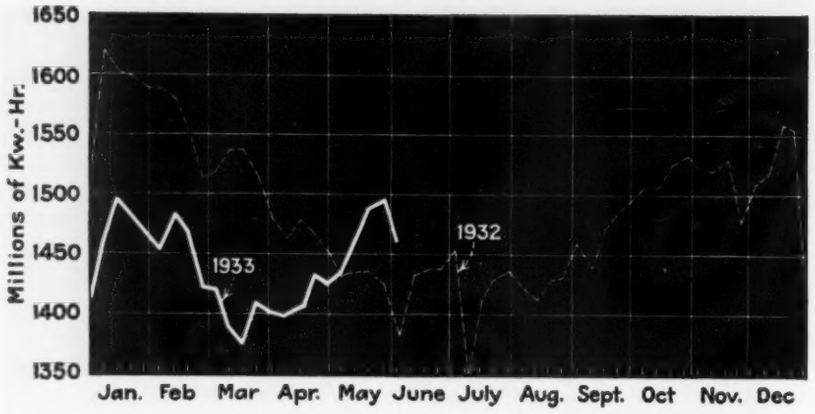
Current Earnings Reports of Electric Light and Power Companies

	1933	1932	Per Cent Increase	Operating Ratio 1933	Operating Ratio 1932
Operating Companies					
Alabama Power (Year ended April 30)					
Gross earnings	$15,149,637	$17,213,770	— 11.9	48	49
Net earnings	7,800,924	8,741,404	— 10.8	..	..
Net balance	820,558	1,845,479	— 55.5	..	..
Consumers Power (Year ended April 30)					
Gross earnings	26,468,158	30,198,578	— 12.4	54	50
Net earnings	12,266,245	15,018,004	— 18.3	..	..
Net balance	3,517,968	6,709,366	— 47.5	..	..
Georgia Power (Year ended April 30)					
Gross earnings	21,784,120	24,335,980	— 10.5	48	52
Net earnings	11,237,054	11,739,606	— 4.3	..	..
Net balance	2,098,119	2,787,955	— 24.7	..	..
New York State Electric & Gas (Year ended March 31)					
Gross earnings	12,912,098	13,307,177	— 2.9	68	65
Net earnings	4,123,853	4,688,865	— 12.1	..	..
Net balance	2,458,395	3,065,474	— 19.9	..	..
Ohio Edison (Year ended April 30)					
Gross earnings	14,639,129	17,234,130	— 15.1	49	45
Net earnings	7,508,593	9,415,613	— 20.2	..	..
Net balance	1,811,645	3,950,221	— 53.9	..	..
Puget Sound Power & Light (Year ended April 30)					
Gross earnings	12,920,386	15,111,885	— 14.5	61	61
Net earnings	5,033,254	5,856,557	— 14.1	..	..
Net balance	114,211*	806,948	—185.9	..	..
Tennessee Electric Power (Year ended April 30)					
Gross earnings	11,237,353	13,218,428	— 15.0	58	58
Net earnings	4,737,327	5,577,682	— 15.1	..	..
Net balance	524,350	1,570,595	— 66.2	..	..
Virginia Electric & Power (Year ended April 30)					
Gross earnings	14,853,568	16,598,632	— 10.3	64	66
Net earnings	5,323,728	5,678,840	— 6.2	..	..
Net balance	2,249,370	2,669,253	— 15.7	..	..
Holding Companies					
Associated Gas & Electric and subsidiaries (Year ended April 30)					
Gross earnings	$95,242,538	$103,747,090	— 8.0	65	65
Net balance†	33,055,744	36,983,239	— 11.0	..	..
Commonwealth&Southern and subsidiaries (Year ended April 30)					
Gross earnings	109,266,868	125,941,372	— 13.3	54	53
Net balance	615,149	11,297,868	— 94.5	..	..
Electric Bond & Share Co. (Year ended March 31)					
Gross earnings	16,936,349	30,484,225	— 44.5	..	..
Net balance	3,575,466	15,162,927	— 76.2	..	..
North American and subsidiaries (Year ended March 31)					
Gross earnings	110,234,739	123,767,292	— 11.0	67	65
Net balance	12,144,629	21,343,107	— 43.0	..	..

*Deficit.
†Available for all dividends.
Gross earnings—(Operating Companies) Gross operating revenue. (Holding Companies) Gross operating revenue plus other income. Net earnings — Earnings after deduction from gross earnings of operating expenses taken to include taxes, depreciation, maintenance, operating, etc. Net balance — Balance available from income for common stock dividends

Output 5.8 per Cent Over 1932



Electrical energy output in central stations in the week ended June 3 made further gains compared with 1932, the excess rising to 5.8 per cent. While the total production, 1,461,488,000 kw.-hr., was somewhat smaller than in the preceding week because of Memorial Day the decline was less than last year.

In announcing the new figures the Edison Electric Institute has added another region, not heretofore separately reported. It includes the territory south of the Ohio and Potomac rivers and the states of Arkansas, Oklahoma, Louisiana and Texas, and is listed as "Southern States."

Replacing the "Atlantic Seaboard," the "Middle Atlantic" is now given separately. It includes Maryland, Delaware, New Jersey and the central and eastern portion of New York and Pennsylvania.

Weekly Output, Millions of Kw.-Hr.

Week ended	1933	1932	1931	1930
June 3.....	1,461	1,381	1,594	1,657
May 27.....	1,494	1,425	1,602	1,660
May 20.....	1,483	1,436	1,645	1,723
May 13.....	1,468	1,437	1,654	1,717
May 6.....	1,436	1,429	1,637	1,689

Per Cent Change from Previous Year

Region	Week Ended June 3	May 27	May 20
New England alone....	+12.1	+11.2	+7.1
Middle Atlantic.....	+ 7.1	+ 4.3	+5.0*
Central industrial.....	+ 7.3	+ 5.4	+3.5
Southern States.....	+12.9	+15.8	.....
Pacific Coast.....	— 2.3	— 7.3	—7.2
United States.....	+ 5.8	+ 4.8	+3.3

*Atlantic Seaboard including New England

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Appliance Makers Report Continued Sales Gain

National sales figures are becoming available to substantiate, upon an industry basis, the reports of increased production of certain appliances previously indicated as unusually high by individual manufacturers. According to the Edison Electric Institute the sale of electric refrigerators in April was 127,917 units, exceeding those of the entire first quarter and comparing with the 58,494 sold in March and the 145,198 sold in April of 1932.

KELVINATOR shipped 43,357 units in May, or 44 per cent above its best previous month, that of April this year. This was 202 per cent of May, 1932, and 256 per cent of the May average for the previous five years.

"The company's shipments for the first eight months of the fiscal year exceed total shipments for the full years 1929 and 1930 and come within 6,050 units of equaling the full year's record for 1932, the company's banner year," H. W. Burritt, sales vice-president of Kelvinator, has stated.

CROSLEY reports sales more than double those of a year ago.

GENERAL ELECTRIC LAMP enjoys greatly increased business in the automobile lamp division. There are 175 employees working eight hours, compared with seven hours a day a short time ago. Output averages 70 per cent of "normal."

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Stamford Smoke Suit

Concerted pleas by no less than nineteen local property owners asking a total of $172,000 damages from the Stamford (Conn.) Gas & Electric Company have been presented before the Superior Court. Plaintiffs allege that revenues have been lost and values substantially decreased by smoke from the company's plant at Stamford. This is said to be the first time in the history of the state in legal procedure that so many cases are involved in the same suit.

▼

Detroit Industries Recover

One of the worst hit of industrial centers when the depression was at its full force, Detroit, Mich., is showing a recovery of proportionate magnitude. Largely reflective of increased activity in the automotive field, industrial energy production by the Detroit Edison Company increased 823,000 kw.-hr. during the week of May 28 and stands 20 per cent over the corresponding week a year ago. Total output of Detroit Edison is also rising, being, in the most recent figures available, 17,333,000 kw.-hr., as against 16,510,000 kw.-hr. in the week previous.

▼

Switzerland Leads World in Appliance Saturation

Third place in the number of appliances per inhabitant, but first place in the number of appliances per inhabitant to whom electric service is available is awarded to the United States in a recent analysis of the appliance market in a late issue of *L'Energia Elettrica* (Italy). Switzerland leads in the first classification and stands high in the second, since service is available there to virtually every resident. The following tabulation covers seven important countries of the world:

	Appliances per 1,000 Inhabitants	Appliances per 1,000 Inhabitants to Whom Electrical Energy is Available
Switzerland.....	207	209
Germany.....	164	209
United States.....	162	233
France.....	154	164
Belgium.....	149	154
Italy.....	127	140
Great Britain.....	74	98

▼

Montreal Utility Absorbs Ninteenth Municipal

Agitation, and action, for and against municipal power projects waxes and wanes. Montreal Light, Heat & Power Consolidated, in a territory rich in controversy, has succeeded in combating the public plant in a highly successful manner. No less than nineteen municipalities in the territory which it serves have, within the past four years, relinquished their power enterprises to this utility's services. Latest is Pointe Claire.

In consideration of $100,000 in cash and $30,000 to be paid in installments over the next two years Pointe Claire will yield its 22-year-old project. All negotiations have been completed and only the approval of the Lieutenant-Governor-in-Council in Quebec is needed before the deal is consummated. Part of the municipality's facilities, valued at $17,000, are to be left it to salvage.

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Companies Seek Dissolution

Corporate existence of Brazilian Electric Power Company, Inc., South American Power Company, Inc., Empresa Guaremaltega De Electricidad, Inc., Empresa Electrica Del Ecuador,

Inc., and Cuban Electric Company, Inc., would be dissolved through certificates filed with the Secretary of State of New York. All of the companies are members of the American & Foreign Power group.

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Missouri Hydro Project Planned for R.F.C. Aid

Yielding to the popular urge, recently followed by Minnesota and Nebraska (ELECTRICAL WORLD, June 3, page 711) Missouri plans a state water power and flood control development to be financed through the Reconstruction Finance Corporation. Army engineers have completed preliminary studies for a project on the Osage River near Osceola, Mo.

The dam as contemplated would be 100 ft. high and 1,700 ft. long and would create a huge lake with its headwaters a few miles northwest of Rich Hill, Mo., on the Marais des Cygnes, near Butler on the Little Miami River, near Eldorado on the Sac River and in the vicinity of Fort Scott, Kan., on the Marmaton River.

It is probable that a hydro-electric power plant will be included if the project is finally consummated. A report of the federal survey will be presented to the Missouri Public Works Commission at Jefferson City for consideration.

The water in the proposed lake would submerge about 218,000 acres of land, including about 83,000 acres in timber. In spots the lake would be 4 miles wide and it would extend up the Osage and Marais des Cygnes Rivers about 100 miles, 34 miles up the Little Miami, 37 miles up the Marmaton and 52 miles up the Sac River. Landowners and citizens of three Missouri counties have voted to back the plan at mass meetings held within the last few days.

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New York Metal Prices

	May 29, 1933 Cents per Pound	June 6, 1933 Cents per Pound
Copper, electrolytic	7.25	8.00
Lead, Am. S. & R. price	3.90	4.10
Antimony	6.25	6.35
Nickel ingot	35.00	35.00
Zinc, spot	4.35	4.65
Tin, Straits	38.875	41.10
Aluminum, 99 per cent.	23.30	23.30

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Geological Survey Reports Increased April Output

April output of public utility plants of all kinds was 6,451,000,000 kw.-hr., the U. S. Geological Survey announces. This brings production closer to last year's than it has been in many months, cutting the disparity from 9 per cent in March to 5 per cent.

Average daily production was 215,000,000 kw.-hr., or virtually the same as in March, whereas the normal change is a decrease of about one per cent. The production by the use of water power in April was 48 per cent of the total, the highest percentage ever to have been reported by the Survey.

The greatest regional advance came in the east north central states, where the disparity compared with 1932 was 13 per cent in March. In April it was only 5 per cent. The change in the Middle Atlantic states was nearly as great. Gains were made also in New England and the West, north central area. The recession in the Mountain States seems to be approaching a turn; the deficiency from the year before has dwindled to 2 per cent. Output in the Pacific States was 7 per cent less than last year.

▼

Industrial Recovery Bill Fought by Trade Groups

Widespread opposition to the proposed industrial recovery bill developed late last week and continued into this one, with but slight likelihood that protests or suggestions would be accepted ultimately by either committees of Congress or by the legislators themselves. Principal objections center around the licensing feature and upon the intimations that labor will be given a high hand even in industries which previously have not been more than slightly unionized.

Under the banner of the National Association of Manufacturers the movement was started. Virtually every trade association in the country is said to have been represented. Many prepared plans for presentation to General Johnson, who again requested that various groups co-ordinate their activities and purposes that the difficulties of the situation may be simplified. It is assumed that the measure, despite all opposition, and perhaps because of the President's apparent willingness to alter his stand on bonus curtailments, will be approved with but few changes by Congress.

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Boulder Dam Started

Without ceremony the pouring of concrete into the riverbed foundation for Boulder Dam, from which the Colorado River was diverted last year, commenced on June 6. For more than two years this pouring—7,000,000 tons in all—will continue, resulting in the rise of a vast concrete structure, 730 ft. from the foundation rock and sufficiently high to raise the height of the Colorado 582 ft. to create the greatest artificial lake ever attempted. Although August 1, 1935, is the date set for the completion of the dam, it will be in use for more than a year before that date for the purpose of storing water. The dam will be 1,180 ft. across and will require 5,500,000 bbl. of cement in its construction.

Major New Construction This Week

Industrial equipment, refrigerating and pumping machinery and transformers will be installed by Silver Foam Brewing Company, Grand Rapids, Mich. Cost over $200,000.

Until June 27, Rockford, Iowa, asks bids for Diesel engine-generator set, etc., for city-owned plant and for complete distribution system. Estimated cost $105,000.

Motors, controls, conveyors, etc., required for rebuilding at Charlotte, N. C., by Virginia-Carolina Chemical Corporation. Cost close to $100,000.

Kuebler Brewing Company, Easton, Pa., to expand and modernize. Cost about $100,000.

Motors, refrigerating machinery, conveyors, etc., needed by Emge Packing Company, Fort Branch, Ind. Cost $100,000.

Until June 16, Oberlin, Ohio, asks bids for city-owned power plant and distribution system. Estimated cost $250,000.

General brewery equipment will be purchased by Charles A. Brady, San Francisco, Calif., for brewing plant and winery to be built by company now being organized. A $650,000 project.

Interstate Brewing Company, Sioux City, Iowa, to expand at cost of $125,000.

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St. Lawrence Amendment for Public Works Bill?

In an attempt to force Senate approval of a resolution to recognize New York State's power claims in the St. Lawrence seaway development, Senator La Follette of Wisconsin has introduced an amendment to the administration's public works bill which in his opinion "will safeguard in perpetuity the public rights to this great water-power resource and insure its development and use in the public interest."

The resolution, recognizing New York's power claims if the state pays $89,760,000 of the total American share of the seaway, has passed the House (ELECTRICAL WORLD, May 6, page 561). Unless the La Follette effort succeeds the resolution appears doomed for failure at this session. Linking the resolution to the current investigation of J. P. Morgan & Company, Senator La Follette said: "No part of the United States' share of the water in the international rapids section of the St. Lawrence River shall be diverted for the benefit of any person or private corporation. Hearings before the banking and currency committee have shown that J. P. Morgan & Company control the principal power and public utility corporations which have sought for years to obtain control of St. Lawrence power for private exploitation. . ."

Electrification Increases Traffic

Apparently induced by the electrification recently made of a steam railway line, and offered by the company as evidence of such results, the Southern Railway (England) reports greatly increased passenger travel and receipts. Where electric service was instituted last July on one line a comparison of passengers carried in the first three months of this year with the same period of 1932 shows number of passengers up by 30.0 per cent and receipts up by 11.8 per cent. The Southern in said to operate the largest suburban electrified system in the world.

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Mining Revives B.C. Power Plans

Expansion of mining activities in the Bridge River country of British Columbia will probably lead to the completion of an interrupted hydro-electric project of the British Columbia Electric Railway. Some months ago work on the Seton Lake project was abandoned after a 13,200-ft. tunnel had been driven through Mission Mountain. A single-unit station was planned.

▼

Mississippi Sales Tax Defined

Mississippi utilities may not legally pass the sales tax imposed by the state on to consumers, according to an opinion handed down by Chancellor V. J. Stricker. A test case was brought by C. D. Ross against the Mississippi Power Company in which he refused to pay the tax.

▼

Englewood Drops Municipal Project

Termination of the dispute between the city of Englewood, Colo., and the Colorado Central Power Company concerning the establishment of a municipal plant has been reached. All litigation will cease and the city will not undertake to condemn the company's lines and plant, nor buy another until 1935. That an amicable arrangement would settle the long dispute was foreshadowed early this year when the Colorado Central company reduced its rates (ELECTRICAL WORLD, February 1, page 153).

▼

Canadian Output Off 2.5 per Cent

While recent Canadian statistics give evidence of rising activity in business and industry, the April figures for electrical energy production announced by the Dominion Bureau of Statistics remain under those reported a year ago. The month's output was 1,295,081,000 kw.-hr., of which all but 19,768,000 kw.-hr. was generated by water power. The total was 2.5 per cent less than in 1932, against 1.2 per cent in January, 2.0 in February and 1.2 in March. Water-power production in Quebec, 703,886,000 kw.-hr., accounted for more than half the Dominion total. This was 0.5 per cent more than in 1932. All other provinces showed a decrease, Ontario, with 338,279,000 kw.-hr., being down 6.7 per cent.

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Would Eliminate Street Lights

Following conferences between officials of the city of Kokomo, Ind., and of the Northern Indiana Power Company during which the proposed plan of the municipality to turn off the street lights for a few months was discussed, the utility has announced that it will not offer objection to such a move.

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Boulder Dam Line to Be Built

Ordering the secretary of the Los Angeles Bureau of Power and Light to sign the contract for the proposed $22,800,000 loan from the Reconstruction Finance Corporation, the California Supreme Court has sustained the validity of the agreement. The funds would be used for construction of the transmission line from Boulder Dam to Los Angeles and it is announced that pending the receipt of the funds the construction will be pushed with power department revenue funds.

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Electrical Exports Rise

Exports of electrical machinery in April, as reported to the Bureau of Foreign and Domestic Commerce, amounted to a value of $2,877,063. In March the corresponding total was $2,732,276. In April of last year it was $4,244,302.

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Utility in Stock Trade with U.G.I.

As part of a plan for strengthening the security and earnings available for its issue of $8,000,000 5½ per cent debentures now outstanding the Delaware Electric Power Company is making arrangements for the acquisition from the United Gas Improvement Company of 75,000 shares of Delaware Power & Light Company stock in exchange for Delaware Electric Power stock. Upon the acquisition of the block of 75,000 shares, the entire 375,000 shares of Delaware Power & Light stock will be pledged as security for the Delaware Electric Power debentures. This pledge will be effected by a supplemental agreement to be dated as of July 1, 1933. At the present time Delaware Electric Power owns 300,000 shares of the 375,000 outstanding common shares of Delaware Power & Light.

Gaseous Discharge Lamps Improved

Recent development work by the General Electric Company, Ltd. (England) has eliminated another shortcoming of the gaseous discharge type of lamp. By forming the inevitable ballast resistance, which these sources require because of their negative resistance characteristics, so that it may be placed inside of the envelope and be used also as a heating element it is possible to manufacture an exceedingly compact design. Double envelope lamps are being experimented with and several demonstration installations have indicated their practicability.

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Penn Yan Again Gives Free Service

Electric light and power customers of the Penn Yan, N. Y., municipally owned plant will receive receipted bills for the month of May, this occasion being the sixth on which the plant has presented its customers with free service (ELECTRICAL WORLD, December 10, 1932, page 776).

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With the Legislators

DISTRICT OF COLUMBIA—Copies of a comprehensive report outlining reasons for the proposed changes in the public utilities act of the District, which would strip the courts of power to review orders of the Public Utilities Commission with the exception of those involving legal questions exclusively, have been distributed to members of the House district committee. The report was prepared by William A. Roberts, special assistant corporation counsel, and sent to the Capitol by the commission, at whose request Chairman Norton of the House district committee introduced several days ago a bill providing for the changes in the utilities act (ELECTRICAL WORLD, June 3, page 713).

MICHIGAN—Measure to abolish the Public Utilities Commission has been sent to the state affairs committee by Lieut.-Gov. Allen E. Stebbins, following the discovery that the Michigan Bell Telephone Company appraisal already has cost more than $525,000. The bill, introduced by Senator L. J. Karwick of Detroit, follows other bills of similar intent which have traveled no farther than the committee on public utilities.

MISSOURI—Senate committee on private corporations has killed a bill by Senator Joffee of Kansas City which was designed to give the Missouri Public Service Commission at least partial jurisdiction over holding companies controlling public utilities in Missouri and power to inquire into all transactions between such holding companies and their subsidiary utilities in the state. A similar bill was approved recently by the House

committee on private corporations and is pending on the House calendar for perfection. This bill is conceded slight chance, for if it is passed by the House it will be referred to the Senate committee which killed the Joffee bill.

SOUTH CAROLINA—Among the taxes substituted for the 4-mill property tax abolished by the Legislature before it recently adjourned was a 1-mill increase in the property tax on public utilities.

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As to Rates——

• Denying the plea of attorneys for the Birmingham Electric Company for procedures involving an actual physical valuation of the properties of the utility before rate reduction hearings be acted upon, the Alabama Public Service Commission has ruled that all data be submitted by June 27. Segregation of electric and railway properties for rate-making purposes has been sought by municipalities and fought by the utility.

• Public Utilities Commission of Sacramento, Calif., alleging that excessive charges have been paid for years on city street-lighting contracts with the Pacific Gas & Electric Company, has announced that a reduction in annual bill of $780,000 by $250,000 to $300,000 will be demanded.

• Flat reduction of 13 per cent in the rates charged consumers in Davenport, Iowa, has been offered the city by the Peoples Light Company. The actual reduction offered was 10 per cent plus the voluntary absorption of the federal tax of 3 per cent by the company.

• Insisting that relief from a base of 7½ cents a kilowatt-hour should be offered, Gabe J. Mouledoux, president New Orleans Board of Trade, has deprecated the fears of President Paterson of New Orleans Public Service, Inc., that receivership might be looming (ELECTRICAL WORLD, June 3, page 712). Mr. Mouledoux pointed that last year, after paying 7 per cent to preferred-shareholders and 56¼ cents a share to common-stock holders, $545,000 was passed on to surplus.

• General orders permitting utilities to modify rules on penalties and discounts relating to payments of monthly bills by customers without waiting to file such modifications with the regulatory body have been issued by the Missouri Public Service Commission.

• California State Grange has filed request with the Railroad Commission of California asking that Pacific Gas & Electric, Great Western Power, San Joaquin Light & Power and Southern California Edison reduce and revise completely their rates to agricultural users; that demand charges be eliminated, and that the new rate be upon the base of a 5½ per cent net return to the corporations.

• State-wide investigation of the rates charged by gas and electric utilities of the Arkansas Power & Light system has been ordered by the Arkansas State Corporation Commission. The regulatory body stated in ordering the probe that many requests had been received for such action.

• Uniform residential rate schedules for all customers of the Tennessee Electric Power Company have been ordered by the Tennessee Railroad and Public Utilities Commission. The order covers service to some 250 municipalities and communities served by the company and involves about 90,000 customers. Annual savings of $330,000 to $340,000 are foreseen. The cut affects not only residential service but, with the exception of two cities, all commercial rates charged. The schedules are to be effective immediately.

• Vote of the Cleveland City Council sustaining its legislative committee in holding the petitions of the Roosevelt and Repeal League unconstitutional will lead to suit before the state Supreme Court for determination as to whether the City Council repeal the rate ordinance of the Cleveland Electric Illuminating Company or submit it to a popular referendum, it is said.

Miami to appeal rate case

• Miami, Fla., dissatisfied with the appointment of Cary T. Hutchinson, consulting engineer with Sanderson & Porter, as special master in its difficulties with the Florida Power & Light Company, plans an appeal to the U. S. Circuit Court of Appeals at New Orleans. Judge Halsted L. Ritter of the U.S. District Court at Miami early last month heard attorneys for the city and the company clash over misunderstandings as to the acceptability of Mr. Hutchinson as special master to act in the rate dispute and ruled against the city. Miami's City Commission (ELECTRICAL WORLD, February 25, page 249) sought to establish a new rate base and passed an ordinance to establish a new and lower rate schedule. The utility applied to the District Court for an injunction (April 8, page 440) to prevent the enforcement of the ordinance. Mr. Hutchinson's appointment then followed.

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Alabama Power Sues Over Power Board Ruling

Insisting that it is entitled to a court review of the findings of the Federal Power Commission in determining net investment in a licensed project, the Alabama Power Company has filed suit in the Supreme Court of the District of Columbia for an injunction to enjoin the enforcement of an order of the commission. The ruling protested (ELECTRICAL WORLD, July 23, 1932, page 98, and August 6, page 164) involved the disallowing of certain items claimed by the company as net investment or original cost of the Mitchell Dam project on the Coosa River in Alabama.

Largest and principal item questioned by the suit is the $3,500,000 for lands and other assets which the company acquired from other companies through a consolidation or merger agreement in 1913 creating the present Alabama Power Company. Other items were also disallowed by the Power Commission, including contractor's fees of an affiliated company. The Alabama Power Company does not in this suit attack the constitutionality of the federal water-power act, merely seeking review of a specific ruling.

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National League Council Backs All-Industry Plan

Resolution of the executive committee of the National Electric League Council, adopted last week, "heartily and earnestly indorses the plan for a national co-ordinating council in the electrical industry as recently proposed by H. P. Liversidge" (ELECTRICAL WORLD, March 18, page 339; April 1, page 412).

"We are in accord with the principle that co-operative functioning in the industry, in the sense which includes all groups, must be based on local organization, local planning and local teamwork," states the resolution. "At the same time we believe that a maximum of understanding and harmony in the electrical industry cannot be achieved by working at it in the localities alone and letting the national phase of the problems drift. A national co-operative body is important to the welfare of the electrical league movement, by its providing a central medium through which the leagues and their activities, as well as the national group associations, can co-ordinate. We believe that the national co-operative body should be based on equal representation of the groups of the industry. It should not be identified with any one branch more than another. The great need is for co-ordination and definite leadership.

"It is our hope that the national associations will speedily establish a national body along the lines proposed. Such action will introduce a new element of stability in the industry nationally and locally. It will provide the organized machinery for nation-wide electrical industry co-operation. It will make possible the development of co-operative programs suited to the needs and opportunities from time to time. It will provide an organized and accepted leadership to stimulate and inspire national and local co-operation in fullest possible measure."

Blank & Stoller, Inc.

George B. Cortelyou

President Consolidated Gas Company, New York

First president of the Edison Electric Institute.

EDITORIAL

L. W. W. MORROW
Editor

Utilities Survey Conditions

IMPRESSIONS of the first Edison Electric Institute convention are as difficult to state as are those of an observer of the Century of Progress. The unanimous comment of 1,100 utility men in attendance was that the program was infinitely superior to the more formal programs of the old organization directed toward a public audience. The meetings were informal and the papers discussed industry topics from a within-the-industry point of view. Executives, accountants, commercial men and engineers sat together, listened together and gathered a general fund of information and points of view that will enable them to return home and act in a coordinated manner.

One significant and dominant sentiment was the unanimous conclusion that increased taxes and increased pressure for rate reductions created a condition for aggressive and active industry selling. Sales are a necessity now and not a half-hearted endeavor to take orders.

A second significant impression was the fact that silence under demagogic attacks has been overdone. As trustee managers for customers, stockholders and investors utility executives must show courage in the public forum. They must state facts and refute malicious and false attacks. Too much silence is as bad as too much propaganda. The papers by W. C. Mullendore, F. A. Newton and B. F. Weadock contain data and opinions that should be known to all in the electrical industry and to the public. They are sincere, competent expressions that dissipate the fog that has been left too long as an obscuring screen to truth.

Add to the well-conducted meetings the constructive work done to organize committees and to amend the constitution of the institute and the evidence is decidedly favorable. The new organization is rapidly translating into action the promises upon which it was founded.

In the center of the stage was the Chicago Century of Progress. In the exhibits, in the lighting and in all of the features of this astounding venture electricity was dominant. As President Cortelyou well said, "in the Century of Progress which this exposition exemplifies the electrical industry is at the halfway mark." The new things, the business still to be had and the transformation yet to be made in business and social affairs can be visualized to set an equally astounding result as the accomplishment of the electrical industry in the next fifty years. Those who attended the meetings and the exposition were well repaid. They were inspired, informed and united in a common and meritorious purpose.

At the First Annual Convention

"WE ARE told that rates have not come down in proportion to the fall in commodity prices since 1929," said George B. Cortelyou, president of the Edison Electric Institute, in the opening address of the first session of the first convention of the newly formed organization in Chicago, Monday, June 5. "The reply to that," continued Mr. Cortelyou, "is that they have not come down because they never went up. What does not go up cannot come down. Rates which are limited to yield only a small fixed return in good times obviously allow no great margin for reduction in bad times, if the industry is to remain solvent. Yet domestic rates have shown a steady decline since 1929. Naturally, they have not declined in the same degree as some commodity prices, but there have been numerous reductions, many of them substantial, amounting in the aggregate to 11 per cent on the average for the country as a whole. And such reductions are constantly taking place in individual cases throughout the industry.

"Our electric utilities have seen their volume of business fall off, their revenues decline, their earnings drop as a result of the depressed state of business during these last few years. Despite drastic economies, a number of the operating companies have not earned their fixed charges during the past year and others have failed to earn either preferred or common dividends, but if, notwithstanding this, a majority of them are still solvent, surely this is no occasion for criticism but for congratulations, not only from their own viewpoint but from that of the public as well. It is a strange confusion of ideas which would put commodity prices up in order to stimulate economic recovery and at the same time would put utility prices down—when the proper functioning of the utilities is necessary to the success of any recovery program. The solvency of the utilities, insuring their ability to continue to render service, must be preserved if chaos is to be averted. No public interest can be served by forcing them into bankruptcy."

Mr. Cortelyou asserted that the tax burden has borne with crushing force upon the utilities and has reached a point where it is now a serious obstacle to further general rate reduction. "Considered in relation to operating income," he said, "taxes of electric light and power companies absorbed 27½ cents of each dollar of such operating income in 1932, compared with 24 cents in 1931 and 22½ cents in the banner business year of 1929. Of each dollar of gross revenue taxes now amount to 12 cents, and this without giving effect to the host of additional taxes levied by state and federal authorities in this present year of 1933. The plain truth is that taxes cannot longer continue their upward course without halting the downward course of rates. As taxes are part of the cost of operation they must be recovered in the rate, which means that the customer must pay them, as he must ultimately pay all taxes of every kind. The only source of taxes is the pocket of the people. When this fundamental truth is fully understood there will be less complacency in the face of mounting appropriations and there will be a fairer distribution of the tax burden."

Concluding his address Mr. Cortelyou said: "The various units of our industry must acquaint their customers and the public generally with the facts of their local situation. The Edison Electric Institute undertakes to present facts relating to the industry at large for the information of all interested persons and governmental bodies, but each individual company must put its own facts before its local public. It has a responsibility to take a vigilant and, if necessary, a militant stand against the misrepresentation and falsification that all too often are labeled as facts and circulated to the detriment of the industry. It must make a vigorous defense whenever it is unjustly attacked, and so far as possible must forestall attacks by keeping its customers fully advised as to its business, its facilities and its service. The public has a right to know the facts—indeed, must know them—if it is to form just judgment. The public's rights is the utility's duty."

Plans for the future of E.E.I.

Previous to his remarks on rates and taxes, Mr. Cortelyou had described the organization and outlined the functions of the institute. He said that the institute has already a membership representing 75 per cent of the electric utility industry and that this figure would be brought up to 80 per cent by the inclusion of applications for membership received.

The budget for the first year of the institute (ten months' operation) is 46 per cent of the 1932 N.E.L.A.

of the Edison Electric Institute

budget, exclusive of the work of geographic divisions. It is possible that the operating committee of the institute may revise its first idea to limit individual membership in the institute to 2,000. The treasurer's report, of which an advance summary was read by B. F. Weadock, in the absence of Edward Reynolds, stated the budget of the first year as being in the neighborhood of $300,000. Mr. Weadock then made his report as executive secretary of the institute. He said that an efficient staff had been retained from the previous N.E.L.A. organization and that this staff was confining its work to the furnishing of factual and technical information to the member companies. He spoke of recently passed and pending legislation in Washington which had been and was now being closely watched by the institute. He stated, however, that the greater part of the work in connection with the industry's interest in governmental and legislative matters must be undertaken by the local companies. It was unfortunate, he said, that the amount of energy transmitted across state lines, although such interstate transmission has no significance in interstate commerce, was so large as to justify placing the electrical industry to a certain extent under federal control. Mr. Weadock recommended to members of the institute that they study the new federal securities bill to learn what effect it may have on their financing in the near future. The Federal Power Commission, he said, is about to embark upon a study of distribution costs. The national business recovery bill, which is now in the Senate, may not affect operating utilities directly, but it would be wise for the members to become conversant with its provisions.

Although the title of this account uses the word "prophecies" in reference to the talk made by Alex Dow immediately following the executive secretary's report, Mr. Dow expressly disclaimed any such implication for his statements. He preferred to call them "guesses." His guesses appear in an abstract of Mr. Dow's prepared address in another place in this number of ELECTRICAL WORLD. Here are some staccato high-lights of Mr. Dow's individualistic views:

Electrical industry in the new deal

"Where do we go from here"—no profit—man old in the industry—only guesses—costs must be ascertained—present value vs. investment—overdose of law—present value will continue to be very important in rate cases—doubt institute will be rated as trade association in the sense of the New Deal—"tell our critics what we think of them"—more local advertising—call it a lie when necessary—don't let lawyers write advertising—"rate-making is an art, not a science"—no slide-rule job—rate areas will become larger—old ideas on rural service made rate differences—these ideas disappearing—decentralization of industry—growing importance of local units in industry—guesses there will be continuing simplification of financial structure—one utility organization is adequate for one area—most troubles in financing come from legalistic requirements—trend from centralized management of utilities—more power to local managers—less technical engineering in management and in formation of policies—engineering should be fundamental—but the utility should not be used to demonstrate engineering theorems—engineers strive too much for perfection in service—direct-current service is being abandoned too fast—the end of the pendulum swing of tax increases is in sight—tell customers they pay the taxes.

Norman Gibson discusses distribution

Following Mr. Dow, Norman R. Gibson, vice-president and chief engineer of the Buffalo, Niagara & Eastern Power Corporation, presented a paper giving the results of an extensive study on the cost of distribution. He emphasized that there are a wide variety of factors that enter into the cost of distribution which must be considered and that any comparison made without due consideration for these factors would be without any meaning.

"Among the difficulties encountered in studying distribution costs are the many variables involved in the problem," Mr. Gibson stated. "Some of these have to do with physical conditions and some arise with the passage of time. Such figures may be applicable within a given load area at a definite date, but they cannot be used as a basis of comparison without complete knowledge of all the conditions applying to the specific case under consideration. In other words, the fact that the costs found in any other place are greater or less than such average value cannot, of itself, justly be considered as a criticsim on the one hand or a compliment on the other."

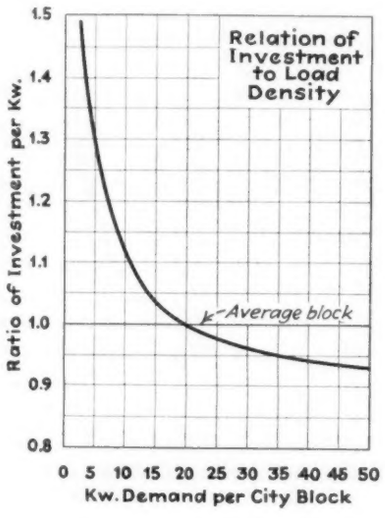
Mr. Gibson said that the allocation of capital and operating costs to various service classifications is a very important element entering into the variability of distribution costs and their determination. The electric power business is a single unified business, he pointed out, and it is not and cannot be divided into separate businesses for each service classification because of the many parts of the physical plant used in common by all classes of service. He continued: "This is not only necessary but highly desirable, since the diversity between the demands of the various classes of service can thus be used to reduce the cost of service to every class. The maximum possible common use of facilities is, as a matter of fact, developed to the greatest practicable degree by every power utility. It is greatly to the advantage of the public that this should be done, but the greater the degree to which such common use of facilities is developed the more difficult it becomes to determine the cost of serving each particular service classification.

"Therefore, if subdivisions of costs are to be attempted, allocations of cost and expense common to all classes of service become necessary. These allocations have to be made on the bases of statistics which are or can be collected in the course of carrying on the business, such as the number of customers, the total demand, the total kilowatt-hour consumption and the total revenue of each class of service. These, in general, are the bases upon which such allocations must be made, but since

these values vary from year to year, due to many causes, no fixed percentages over a period of years can be determined as bases for succeeding annual allocations. On the contrary, each year's costs have to be allocated independently of those of every other year. One of the variables which affects the percentages or total cost allocated to various service classifications is the changing industrial load in periods of business prosperity and depression; a plant built to supply the peak demands of a year like 1929, for instance, is obviously overbuilt for the demands of 1932. Since, however, the industrial load decreased from 1929 to 1932 and the residential loads generally increased, it is obvious that the proportion of the total common investment allocated in 1932 to residential service had to be greater than it was in 1929."

Variables of distribution

Mr. Gibson catalogued some of the more important variables entering into the cost of distribution as between different localities. These variables depend upon the nature and quality of the construction and upon the number of consumers supplied. Distribution costs also vary with the density of consumers per unit of area. Six thousand consumers per square mile can be served at less capital costs and yearly operating expense than if they are scattered over a territory of 6 square miles. Costs will vary with the active load per unit of area. For instance, if a dozen large industries could be concentrated in an area of 40 acres, the capital invested to serve them would be materially less than if they were scattered over 2 or 3 square miles or along a 5-mile waterfront.



Distribution costs are dependent also in lesser measure upon the design of the system. There may be large, manually operated substations and long feeders reaching out 2 or 3 miles, or small automatic substations with short feeders only ½ mile long. They are dependent in some measure upon the kilowatt demands of the consumers and also upon the diversity of these demands. If a given group of consumers were to double their demands for power, it would certainly call for increased capital expenditures and increased operating expenses. Combinations of all the preceding factors in greater or lesser degree make the actual costs of distribution different for each city, village or rural district.

One of the most important variables in the cost of distribution of electrical energy is the amount of such energy that the customers use, according to Mr. Gibson, and one of the principal causes of variability in this amount is competition with other forms of energy. In the early days, when the principal service rendered to the domestic consumer was the supply of light only, the competition of kerosene and gas was overcome by the greater convenience, safety and cleanliness of electric light, but today, when the largest use of electric energy in the household is for the supply of heat, the competition of gas is not as easily overcome. The effect of such competition for cooking and water heating is very evident in comparing the kilowatt-hour consumption of domestic consumers in territories where gas competition is keen with that where it is not. "Incidentally," he said, "the much-talked-of 'monopoly' which the electric utilities are supposed to possess is today, if indeed it exists at all, confined almost entirely to the field of furnishing light to residential and commercial customers. In the fields of energy supply for heating and mechanical power the electric utility industry is in direct and keen competition with other sources of supply."

Another class of cost which has entered into the rapid growth and building up of the electrical industry, and under which it still labors, is concerned with the burden of obsolescence due to advancement in the art and to standardization. At the beginning of the use of alternating current frequencies ranging from 15 to 133 cycles were used in various localities. Likewise, two-phase and three-phase services were used under different conditions. Today 60-cycle and three-phase is used practically throughout the United States. This standardization, together with many others, has required the replacing of considerable equipment before the end of its natural life. However, such is the price of rapid progress, and all consumers are benefiting from uniform practice which enables more efficient manufacturing throughout the country, and ultimate economy to the consumer.

In discussion of Mr. Gibson's paper, H. B. Gear, Commonwealth Edison Company, Chicago, developed further Mr. Gibson's statements that comparison of distribution costs in different cities are of little significance unless there be an accompanying comparison of the conditions that determine those costs, by saying that not only do these differences exist between different cities, but also they exist in various areas of a single city. Mr. Gear cited Chicago as an example, with its energy demand in the Loop district covering an area of about two-thirds of a square mile of 110,000 kw. at the peak hour. In this area the peak demand is at the rate of 150,000 kw. per square mile. In the areas immediately north and west of the Loop district, which are served by a d.c. system, the load density is about 25,000 kw. per square mile. Outside of the d.c. district and eliminating from consideration many large users of service the average load density on the 4,000-volt radial distribution system is about 2,000 kw. per square mile. In this area there are about 700,000 residential and 120,000 commercial customers. Included are users of light and power up to 20 kw., but the average demand of the entire 820,000 customers is about ½ kw. In parts of the city characterized by large apartment houses the load density rises as high as 5,000 kw. per square mile. And in other sections where apartment houses are smaller and there are many one- and two-family houses, 1,000 kw. or less.

In such a system the city block may be regarded as the unit of local investment required to serve it. In the early period of development, when there were four or five users in a block, the investment in line, services and meters in the block is nearly as much as it is for the entire system of meters, substations and generating plants from which it is supplied. As more buildings are erected there are added more services and meters and the capacity of

the transformers is increased. Under Chicago conditions the number of users may be increased to about 35 per block before the initial investment in the local block has been doubled. By this time, however, the general plant investment outside the local block has increased to about 4.4 times the local investment. In other words, an increase of sevenfold in the demand for energy in one block has made a twofold increase in the local block and a fivefold increase in total investment.

The total plant investment per kilowatt of demand in the block is about 50 per cent higher when there are five users than when there are 636 users, which is the average customer density in Chicago. The variation in the investment per kilowatt of total plants required to supply various demands per city block is illustrated as a ratio to the average block in the graph on page 750. With 85 per cent of the residential users of electricity in Chicago living in apartments and with an average of 36 customers per block it is obvious that distribution costs for retail service will be somewhat lower than for smaller cities and towns where single-family houses are the rule and ten to fifteen customers per block is more often the average load density.

In the operating expenses the same principle applies, though it is not readily evaluated. Less traveling time for meter readers, bill delivery boys and service men tends to increase the amount of work done per employee per day, as compared with similar work done in scattered areas. Thus both investment and operating costs may vary substantially with load densities.

Mr. Gear stated that while the figures he gave apply to different parts of a single city, they serve to illustrate the wide-range investment costs which may be required to render service at different load densities in different communities. Hence, he said, the difficulty of laying down distribution costs which can be considered as having general application.

Distribution cost comparisons may be fallacious

Another difficulty in the way of comparison of distribution costs as between different cities and different systems was pointed out by H. B. Fuller, Byllesby Engineering & Management Corporation, in that the uniform classification of accounts for electrical utilities (the 1922 edition is the last one available) does not specify definitely enough the allocation of capital, operating and maintenance costs. The plain, perhaps unpleasant, truth, said Mr. Fuller, is that the industry has failed to realize the importance of agreeing on the factors for determining this large item of cost.

Mr. Fuller urged that engineers, operators and accountants immediately make a serious concerted effort to agree upon a standardized subdivision of transmission and distribution facilities for use by the accountants in setting down not only capital costs but operating and maintenance costs. After following the new procedure rigorously for a few years a set of costs will be available which, while they cannot be used for universal standards, can be used for comparison. Some more or less arbitrary decisions will be necessary, but if the committee recommending them is competent there should be no quarrel with the decisions.

Mr. Fuller stated his opinion that Mr. Gibson's reference to reasons for variation in distribution costs should be stressed in the instance of "quality of service." Demands upon the utility for community improvements is another phase of costs that is at least worthy of mention. The character of the terrain covered by the distribution system is another important factor in costs. Mr. Fuller said he had in mind one city of considerable size where many of the residential sections and part of the business section are traversed by deep ravines, increasing the capital operating and maintenance costs.

The session was concluded with a talk from E. W. Lloyd, who, as chairman of the committee in charge, might be said to be responsible for the exhibit "Electricity at Work" at the Century of Progress exposition. Mr. Lloyd told how the costs of the exhibit has been budgeted at a considerable figure when the project was first contemplated, but that business conditions required a considerable trimming down of the original figures. The exhibit as it now stands represents a cash expenditure of about $220,000, subscribed by about 80 utility companies. This cost may seem high, but it is not truly so in terms of the individual subscribers, nor in comparison with the value of the exhibit to the industry at large. About 200 manufacturers, not alone in the electrical industry but in many others as well, made contributions of materials, models and expert advice to the construction of the exhibit.

Outages, Power Stations and Sales

Investment measure of service standards.
Unit power stations favored.
National sales programs.

AT THE second session S. M. Dean presented the first paper on measuring system service standards in terms of outages to fix the investment. An extensive study of interruptions and outages on the Detroit system gives a yardstick to measure service reliability and permits judgment to be exercised in making investments to increase the reliability. By means of these records the probable duration and number of outages to be had on the different parts of a system are determined.

These data are then weighed against the cost of minimizing and eliminating the outages; studies were applied to the different parts of the system and especial emphasis was placed upon distribution studies. The use of a fixed wire size with variable transformer sizes and spacing was advocated as the best answer to distribution economy. Mr. Dean advocated an ungrounded neutral, ringed primaries and banked transformers as giving best and most economical service on distribution.

H. W. Eales praised the paper for the treatment of the entire system in perspective and suggested that load duration curves would help by showing the peak loads and the time occurrences of outages as well as helping to control loadings on a temperature basis. B. F. Huff stressed the necessity for adjusting service standards to the several different conditions found in serving customers in different areas. Expenditures for load growth are obvious, but those for improving reliability and voltage regulation require a great amount of judgment. A. E. Silver said that the real measure of service reliability was measured in outages and that these were the product of the number of interruptions and their duration. The primary lines of the data shown by Mr. Dean were the source of greatest trouble. He suggested that the method to improve their operation was

to provide quick disconnection and automatic reclosing, with the use of some device to spill over the lightning at insulators. The primary fuse was coarse in setting and difficult to replace automatically. Mr. Silver suggested the development of automatic reclosing breakers in the secondary to help reliability. Merrill DeMerit showed that distribution investment expenditures were major on utility systems, yet distribution engineering was neglected very frequently and much of distribution engineering was done from the false point of view of transmission engineering.

After the paper by Mr. Dean the chairman of the board of trustees of the E.E.I., B. C. Cobb, was introduced by President Cortelyou. Mr. Cobb stated that he held no brief for the holding company or for the operating company. In his opinion there should be a happy combination of the two and of the principles of centralization and decentralizaton to get best results. The failure of some holding companies was in keeping with the times, as many business failures had occurred in the past two years. In the opinion of Mr. Cobb we shall return to the gold standard, but in the meantime there should be given loyal help to carry out the fundamental processes of the new deal. He paid compliments to his associates and others who had helped organize and make successful the E.E.I. and expressed his faith in the future of the industry. He stated that the industry was undergoing attacks, mostly unjust, and that it should defend itself valiantly when it is right, while acknowledging with good grace when it is wrong.

Obsolescence in power plants

The second paper, by F. S. Clark, dealt with modern trends in fuel-burning power stations. The unit station with single-shaft turbines was advocated. Use of higher pressures and temperatures was discussed. The place of the Diesel engine in utility generation and the recent developments in process steam stations and mercury-steam stations were outlined. W. S. Monroe pointed out that in 1921 a station's best performance was 18,000 B.t.u. per kilowatt-hour, while today the figure is 12,000 B.t.u., with the mercury-steam plants at 10,500 B.t.u. It appears that there is a gain of 10 to 15 per cent still to be had with the steam station and about 23 per cent with the mercury-steam plants. He pointed out, however, that thermal gains meant greater fixed costs and that these costs now assumed major importance with the increase in taxes and the trend toward higher depreciation rates. E. W. Allen pointed out that plant investment had increased at a greater rate than the kilowatt-hours produced. He also stated that there was some 5,000,000 kw. in steam plants operating at 250 lb. pressure or less. This indicated that many of these plants could be rebuilt or could have mercury or high-pressure units superimposed to advantage. He stated that large turbo-generator units now have an efficiency of 98.5 per cent and that a kilowatt of output was now had for 61½ per cent of the material required for a 30,000 kw. unit of ten years ago. He also suggested that large vacuum tubes promised to be developed and that these would influence power generation greatly by making systems more stable. S. M. Kintner suggested that the gains to be had from higher pressures and temperatures would stimulate research workers. He raised the question as to the use of large concentrated stations vs. a larger number of smaller stations. He also looked upon vacuum tube developments as promising and urged utilities to co-operate with manufacturers in field trials of these devices.

A. R. Smith said that relative prices of coal, oil and gas made it advisable to consider station designs for any or all of these fuels. He suggested that a semi-portable generating source might aid in handling peak loads and in serving industrial plants. He pointed out that the trend toward outdoor stations was logical and economical. The building life was 100 years, while the apparatus life was only 25 years. Also, design limitations, ease of remodeling and of making extensions favored the outdoor station. Looking back, it is found that the building structure is the greatest handicap to rebuilding or remodeling old stations.

P. W. Thompson outlined the experimental work done with high-temperature equipment at Detroit. The results of these tests are not yet conclusive, but he was confident that practical stations could be built to operate at 1,000 deg. F. The 10,000 kw. turbine unit at Detroit operates at 1,000 deg. F. and more with less difficulties than were anticipated.

National sales plans best

The several national promotional sales efforts of the industry were discussed by J. E. Davidson. The two yardsticks to measure these efforts are benefits to customers and material results to the industry. All the campaigns have been very successful measured by these yardsticks. The first campaign in 1924 covered home lighting and the 1,000,000 essays received from children is evidence of the great wave of improved home lighting that swept the country as a result of this effort. Next came the industrial lighting campaign of 1925 and this was followed by the food preservation campaign of 1928. This prepared the way for the refrigeration campaign that has been so successful; 960,000 refrigerators were sold in 1931, 760,000 in 1932 and up to May 1 this year 380,000 have been sold. The final campaign is the present electric range program. Each of these campaigns was successful because a good article or a good idea was sold to the public by co-ordinated efforts. In the opinion of Mr. Davidson, this type of co-operative effort is essential today and has proved its merits. It is the only way to sell on a big scale.

This paper nicely laid the background for a discussion of electric range selling by P. S. Arkwright. He stated that about a year ago the campaign was started and that lukewarm support had been given the council by the range manufacturers and the utilities. Most of the work of the field men and of Mr. Arkwright has been spent in persuading the industry itself that it should and can sell electric ranges. Despite the year of 1932, the organization has gone forward, eleven regional directors have been appointed, 93 local councils are ready to go to work. There are 11,000,000 customers in territories that have a 3-cent rate or less. The Cookery Council is ready to go if the industry will give the word.

Ranges must be sold

Field reports indicate that chief executives of utilities are lukewarm and uninterested. Mr. Arkwright said very bluntly that the industry must sell ranges to survive. It cannot stand still under the agitation for rate reductions and the only way that rate reducions are practicable is through selling more energy. The range must

be added to the homes and it opens the way to electric water heating. For the same reasons that electric light and electric power are without competition electric heat excels, and in many ways the range is more needed and more desirable than any other electrical product or service. Yet the industry has done nothing to sell this device. Under present industry conditions, in the opinion of Mr. Arkwright, the industry must sell ranges and the Cookery Council is ready to sell if support is given to the movement by the manufacturers and the utilities.

He contrasted the refrigerator campaign, wherein it was necessary to sell the public the idea of refrigeration before the units could be sold, with the necessary and tangible assets of electric cooking. He suggested that the bugaboos about wiring cost and distribution costs were alibis without reason and raised the question as to why it might not be possible to consider customers' wiring in the same manner as facilities in generation and transmission. He urged action and the development of more sales outlets. He stressed the business necessities of the industry and the criticisms about rates and showed that selling ranges was the method to use to overcome these troubles.

Load Building, Air Conditioning, Lighting, Demonstration Kits

Two cities report success in air conditioning
Public relations related to lighting sales

SINCE his company is one of the leaders in the development of air-conditioning load and last year put on the first large campaign to advertise and sell the idea to utility customers, the paper by C. E. Michel, Union Electric Light & Power Company, occasioned much interest. One gathered from the reading that air conditioning will continue to be pushed in St. Louis and undoubtedly many who listened while their shirts stickily adhered to the chair backs—coats had been abandoned at the opening of the session—wished that the art of air conditioning had burst upon the world years ago and was now an accepted thing in convention meeting rooms. The first and most easily developed market is in commercial places, according to Mr. Michel, who related several instances of the effect of air conditioning in retail businesses.

The discussion of Mr. Michel's paper was in three aspects, air conditioning in industrial, commercial and residential applications, by R. H. Tillman, Consolidated Gas, Electric Light & Power Company, and Davis M. DeBard, Stone & Webster Service Corporation, and on the general points of the development by W. H. Hodge, Byllesby Engineering & Management Corporation. From these three discussions emerged the conclusions that, in its present state, air conditioning does hold out the prospect of profitable utility load, that industrial and commercial applications offer the most immediately promising field for commercial effort and that, while no deprecation of the ultimate value of the load could be stated, it would be advisable for any utility to analyze closely the cost of obtaining air-conditioning business in comparison with the revenue to be derived from it.

A revival of interest in good old electric lighting as a source of profit to the utilities was foreshadowed in the next group of papers. The first was "Lighting Fields to Explore with Profit," by M. E. Skinner, Niagara Hudson Power Corporation, and by discussions of this by H. M. Sawyer, American Gas & Electric Company on commercial and industrial applications, by R. E. Fisher, Pacific Gas & Electric Company, on residence and rural applications and by Oliver Hogue, Commonwealth Edison Company, on the general subject of lighting. Mr. Skinner's paper dealt principally with the possibilities of improving lighting conditions by showing customers how best to use electric light. In evidence of his contention that most people, even in this day, have hardly any conception of the proper use of light, Mr. Skinner presented the results of a recently completed investigation in Utica, N. Y. This investigation was short and covered only about 85 customers, and was intended, in fact, only to sample the existing conditions. But the sample proved, said Mr. Skinner, that customers would respond to such efforts in two ways, improved revenue and in better feeling toward the service company.

Mr. Sawyer in his discussion related a number of instances corroborating Mr. Skinner in his estimate of the value of educating the customer in the proper use of electric light. These instances were from the experience of the American Gas & Electric Company with the "demonstration kit" which originated in that company. We quote:

"A striking example of the value of this activity in improving public relations is to be found in the service rendered to an industrial customer—a large shoe company in Portsmouth, Ohio. The power engineer in that city during one of his periodical calls was asked to make an effort to improve lighting conditions in the plant. In such a factory there are many locations in which perfect lighting conditions are necessary. Leathers must be matched with the greatest exactitude and inspection of the shoes must be carried on in brilliant light with freedom from glare. This power engineer immediately called the lighting service man and a survey of the entire plant was completed. In many instances it was necessary to sit down at the workman's bench and solve his individual lighting problem. While sweeping changes in the installations were not necessary, as the plan was quite modern, enormous improvement in lighting conditions was brought about and one workman noting the better light on his particular job was quoted as having said: 'At last the angel has arrived.'

"Now it is true that we secured some additional lighting load in this plant and, incidentally, the power engineer turned up some electric heating applications while he and the lighting service men were studying the lighting conditions, but most important of all, we made a great many friends. These were not confined to the executives of the shoe company but included a considerable part of the thousands of employees in the plant who appreciated the improved conditions under which they were working."

Mr. Fisher's discussion centered chiefly on the proper sizes of lamps to be used in different applications in the home. He showed that many people, either through mistaken ideas of economy or through plain ignorance that lamp sizes should be selected according to intended use, were enduring discomfort and courting troubles of vision and that it was easy to get them to improve their lighting conditions once they were given an understanding of

what it was all about. Substandard lamps and the evils in the train of their use figured largely in Mr. Hogue's discussion.

The session was closed with an excellent summing up of the selling job now before the electric utilities by George E. Whitwell, Philadelphia Electric Company, in a paper, "Commercialism and Competition." His theme was that in industrial applications, in appliances and in lighting a lot of electric service that was thought to be "sold" has become "unsold" principally because people are gripping their pennies harder than before. Industrialists listen attentively to the siren song of the isolated plant salesman, domestic appliances rest on kitchen shelves undisturbed, and Willie gets a cuff on the ear if he forgets to turn out the light. All of which means that selling effort on the part of the utilities must be unremitting and extensive.

Taxations, Rates and Investigations

Unjust and discriminatory taxes should be fought.
Present status of rates.
Weadock reports on Federal Trade investigation.

AN UNUSUALLY vital and interesting program was presented on Thursday morning. A splendid paper and discussion on taxation was accompanied by an equally good paper on rates and this was followed by a report by Mr. Weadock on the Federal Trade investigation. At the opening of the session proposals for changes in the constitution were proposed and passed. These dealt with questions of individual memberships, an enlargement of the statement of information to be supplied by applicants for membership. The title of executive secretary was also changed to that of managing director.

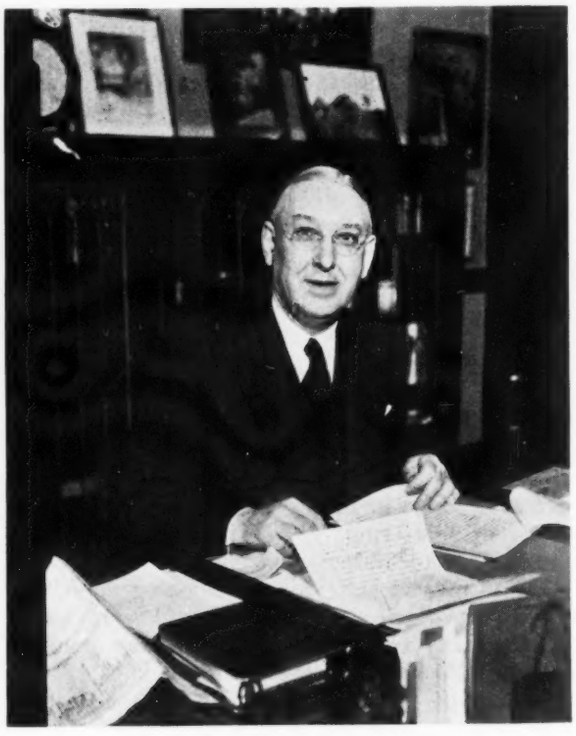
Taxation was discussed by W. C. Mullendore. He stated that taxes had risen to a floodtide, while business and trade tide ebbed. He pointed out that all the research and technological progress and all the work of engineers to reduce costs were discounted by the mounting increases in fixed charges introduced by taxes. Taxation has become an item of controlling importance to the industry. No citizen has a right to complain of just taxation, but excessive and discriminatory taxes are unjust. They deprive the public of more value than the public treasury receives. The utility industry now suffers from unjust and discriminatory taxation and this destroys both purchasing power and values, affecting the public and the rental payments paid to the pooled savings of those who have invested in the industry. The proposed 3 per cent tax would destroy value and purchasing power many times in excess of the $125,000,000 collected in taxes. In addition, it would limit rate reductions and service extensions in the public interest. The tax burden per kilowatt-hour approaches the cost of production. Despite public clamor against taxes, little has been done to prevent destructive taxation of utilities. In the opinion of Mr. Mullendore it is the duty of utility executives, as trustee managers for investors and stockholders, to inform the public. Until they have done this they have failed in their duties.

In a splendid discussion of rates F. A. Newton laid down the principles that rates must be compensatory, without discrimination and commercially effective. Reductions of top rates largely tend to benefit domestic customers already carried at a loss and penalize the average use customer. In dealing with special rates to absorb present surplus capacity Mr. Newton urged caution by the inclusion of a time clause and nondiscrimination between customers. E. J. Fowler agreed with the principles stated and suggested that off-peak or class rates might be used to get unserved industrial load in the early morning and daylight hours. Nearly 2,000,000 kw. of capacity is available under these conditions.

Samuel Ferguson suggested that this period might be used to give added service to customers rather than to lower demand charges and cited the placing of 1,200 ranges in Hartford in two months as an example. The rental charge is being waived for a period of twelve months.

Thomas N. McCarter said that he believed he had obtained more value from this meeting than from any he had attended in the past. He urged the industry to fight and to inform the public of the facts when extremists attacked it unjustly. The value of truthful publicity without propaganda should not be forgotten in this critical time.

The final paper on the program was the discussion of the Federal Trade investigation by Mr. Weadock, who also said that the public had not been informed of present facts about the utility business and agreed with other speakers that it would be well to let the public know of present conditions. Prize awards were announced as the final item on the program.



E. W. Lloyd, Commonwealth Edison, the "showman" of Electricity at Work

What Does the Future Hold?

By ALEX DOW
Detroit Edison Company

Introducing his address before the E.E.I. as "Where Do We Go from Here?" Mr. Dow cited from a paper he read at an N.E.L.A. convention in Chicago in 1898 which held that the price of electric service should be based on a reasonable profit on investment which should be determined by a competent authority apart from the supply company. His conclusion in 1898 was a protest against the "present value" theory of costs which was set forth in the Smith vs. Ames decision of the Supreme Court. He referred to the Los Angeles Gas & Electric decision of 1933, which states that "the judicial ascertainment of value, for the purpose of deciding whether or not rates are confiscatory, is not a matter of formula, but that there must be a reasonable judgment having its basis in a proper consideration of all relevant facts." Which is to say that if a ruling shall not in effect be confiscatory, the Supreme Court will not concern itself very much with the reasoning on which it is based.

I AM guessing at the lessons now to be drawn from important court decisions. Also, I wonder if we have been dealt any good cards. After several readings I do not find myself being sorry, but somewhat the contrary. We have had in late years an overdose of law and lawing, of formulas and of experts. If hereafter we shall seek and be helped to seek substantial justice, with the knowledge that the ultimate judicial authority will not only neglect trifles (according to the rule, *de minimis non curat lex*), but will judge only the broad issue, namely, whether the decision is effective justice or effective injustice—whether it is confiscation or is not—then we shall be encouraged to dispose of disputes promptly by business methods, instead of leaving them to the law's delays. Nevertheless, giving all respect to the law and to the court, I trust that one or other of the cases now in progress shall, when it arrives in the Supreme Court, have a clear issue of attempted confiscation, and that in its opinion thereon the court will give us the reverse sense of its present dicta.

It is now an interesting speculation as to whether 35 years is the period of a recurring cycle wherein prudent investment shall alternate as a major factor with present value of property. For me that speculation would be academic. I do not intend to be on the job when another 35 years shall roll around. But my guess is that present value will continue to be one of the relevant facts to be taken into the reckoning in setting a rate base, and that it will continue to be mighty important.

Time to be outspoken

Here is another of my guesses—that we are coming into a period in which we shall be more outspoken, as an industry and as parts of the industry. We have joined ourselves into this institute under an agreement which makes each of us answerable in some part for the other. By mutual consent we have taken to ourselves a certain amount of disciplinary authority. That authority is not enough to have dealt with certain detrimentals of the past, nor to affect non-members of the institute hereafter. It is enough to give appearance of solidarity. I doubt whether we will be rated as a trade association—as one of those whose function under the New Deal is to co-ordinate output with markets, with federal support. In the nature of things we members are not competitors. We have not been cutting one another's business throats, nor are we likely to do so. I guess that the institute will not have any early spectacular occasion on which to speak for the industry—such an occasion as might cause the speech to become news. If the day shall come when the institute is thus to speak, then the speaking should be straight talk and in no wise apologetic. There will be less than nothing to apologize for if we fulfill the purpose for which we have organized, and it will be in order for us to tell our critics what we think about them. Such talk will surely be news, according to the ruling that it is news when the man bites the dog.

More local advertising

For the next year I guess that our members will do more local advertising than heretofore; that the copy will be in the common speech of the day and signed by an executive, and that when there is a lie large enough to deserve recognition we will call it a lie. Whether we shall name the liar is a point on which we had better take advice of counsel. Don't let counsel write the advertisements. Listen to good advice, but don't let it cramp your style.

I recall that a professional faultfinder, who remains unmuzzled and unbitten, years ago denounced the rate research committee of the National Electric Light Association as a rate-fixing committee. Our new rate research committee will find some work to do in rate research, but not a great deal. There is little to add to what has been

written by the older committee. But there is need to reiterate with much force the teaching that analysis cannot make rates; that rates are made for the future and not for the past; that rate-making is an art and not a science. I guess that this teaching will be thorough. We need science, but we need it in its own place. We have with us some good men who continue to think that they can solve any rate problems with a slide rule and a table of constants. On the outside there are doctrinaires who feel that their own painfully acquired arithmetical erudition is adapted to deal with such a psychological problem as rate-making. My guess is that in our rate practice hereafter we are going to paraphrase the Supreme Court on valuations—to wit, that all the considerations, including all the pertinent facts, will be studied when we have to make a new rate or alter an old rate, but that the conclusion will be reached by the exercise of reasonable judgment. Analysis can keep us from foolishness in either direction, but only common sense backed up by experience can predict what reaction is to be expected from a new rate.

Rate areas to become larger

Here is another guess—that our rate areas will become larger than they have been; that there will be an end of the adjustment of rates to each small community. There is no real reason why a rate area and an economic area should not coincide. The extreme case is rural service, wherein much progress has already been made. Notice that when it was our fashion to build rural lines according to the same specifications that pertained in urban communities the dispersion factor was serious and different schedules were imperative. But in these days we have accepted reasonably high roadway voltages, and we build with lighter poles and 400-ft. spans, and the cost per mile has fallen surprisingly. We need cheaper protection against lightning for small rural transformers—possibly better lightning arresters or possibly surge absorbers, but preferably along the line of transformer improvement. Even in districts where farms run four to the mile the differences in cost are tending to disappear as between rural service and metropolitan service, and the differentiation of rates is yearly less warranted. This likewise is true—that in the Middle West, the Northwest and on the Coast the dirt farmer has welcomed the advent of electric service. He has not yet forgotten the days of kerosene and candles, and his good will is an asset.

A corollary of an economic area served under one rate schedule is that industries now cramped and concentrated in large cities are helped to move to smaller communities. Many big industrial plants are going to be decentralized. The automobile industry, which happens to be under my observation, is a sample. It is cheaper to ship parts to assembling points than it is to ship complete cars. The assembly plant has just now been overplayed. It has not been adjusted to changes in transportation. When road and rail and water transportation are once more co-ordinated into the manufacturer's problem, the smaller local unit of production of parts will cease to be handicapped in comparison with the centralized factory. Given the same rates for power as in the big city, which has its heavier tax burden and its difficult living conditions, the smaller country plant will have an increasing advantage.

A few guesses now as to our own peculiar problems—I guess there is going to be a steady simplification of our corporate and financial setups. I don't speak of holding companies. That tangled skein will unwind itself. Accept the idea of the economic area, then one trading name should be adequate for one area. We have learned that complexity of organization is of itself to be avoided, when and if avoidable. If for legislative or corporate reasons it is not possible to simplify to the lower limit of one class of stock and one general mortgage, we at least should have legal facilities toward simplification, and good will while the slow job is being done. My own job of that sort took twenty years.

Another guess—the trend for a few years has been away from centralized management. There is a limit to the local knowledge of one mind, or of the two or three minds that can work together without divergence. In our own industry, as in others, the effects of overcentralization are recognizable. I guess that there will be more latitude given to local managers—latitude enough to let them be known as local people having local interests at heart and yet speaking with authority. I never had much use for the local agent who did not believe in his own town and speak up for it. He is the better man for his employer because he stands well with his neighbors. That holds for a state manager as well.

No proving ground for engineering theories

Still more guesses—I think that we are going to have less technical engineering in management—not in the settlement of day-to-day problems, but in the laying down of broad policies. Our industry is built upon engineering and cannot exist without that foundation. But it should be a foundation. Our business is not to demonstrate a theorem, but to give acceptable service in return for a reasonable payment. There is no use weeping over spilt milk, but I can say without tears in my eyes that our engineers have not always counseled us wisely, and that some of our present technique has surrendered too much to perfection of method, with a loss of commercial usefulness. Even today we are being hurried too fast out of our direct-current distributions. These made the industry a commercial success. These today give the best service that is given by any of us. Acknowledging that we cannot run synchronous clocks on direct current, why should we not leave some chance for existence to Seth Thomas and Westclox? Acknowledging that most radio sets are designed to take their energy from alternating-current circuits, I see therein no insuperability in these days of tube conversion. In plain, I do not see that any differential of cost which I can pass on to my continuous current customers will warrant them in changing their equipment. And I am not minded to follow a theory of costs into a five year plan involving large expenditures that must needs be written off. My guess is that direct-current distribution is going to stay for a while yet.

Taxes near end of pendulum swing

About taxes—our industry is a mark for taxation just now—unjust, unreasonable and even vindictive. I guess that the pendulum is now near the end of its swing in the wrong direction. I guess that the way in which most of us are going to help the reverse swing is to make it clear to our customers that they pay our taxes. I have been advertising that there is only one way in which my company can pay a year's taxes, namely, by collecting

them out of the year's business. I guess that we are going to show that we must pass these taxes on, because it is economically impossible for us to do otherwise. And I guess that we are going to drill it into our customers until they understand it—that indirect taxation of themselves through the lighting companies is in most cases a departure from mental honesty by the taxing powers—an evasion of criticism that might hurt political careers, and that it is up to these customers of ours to make the protests that will take the taxmasters off their backs as the tax earners. We cannot begin that campaign of education too quickly. It is impossible to be too frank in our expressions. The taxes laid on our customers through us have trebled in the last ten years. We are weary of being tax collectors, even if we are infinitely more efficient in that respect than the officers who do the collecting.

I have more guesses about the future, but I have offered enough. As I said already, if these guesses are wrong, so much the worse for me and mine. I give these now for what they may be worth to you. I never was burdened by pride of authorship, so if you shall say they are without value I shall not be hurt.

▼ ▼ ▼

The Federal Trade Investigation

Net write-up only 5 per cent.
Rates of return cause of confusion.
Interpretation of investigation.

By BERNARD F. WEADOCK
Vice-President and Managing Director Edison Electric Institute

AN IMPORTANT fact in the electric utility industry today is government—regulation by the government and investigation by the government. The states fix our property values, they prescribe our accounting systems, tell us how much we may earn and prescribe rate schedules to bring about such an income. The federal government licenses our water powers and proceeds to regulate their operations wherever the blanket of state regulation leaves a spot uncovered. Special congressional committees inquire into all our activities, the work of one often overlapping that of another. But extending over it all is the investigation by the Federal Trade Commission, now well into its sixth year of continuous research. Government conferences and hearings have become a part of the routine of every large utility executive. The governmental questionnaire finds its place alongside of each company's ledgers.

The Federal Trade Commission has conducted since its organization more than 73 investigations, ranging from an investigation of peanut prices to the method of sale of farm machinery. According to the commission's report, the costs of such investigations have ranged from nothing to $1,598,677.13, the latter figure being the cost to the government of the Walsh investigation. The investigations included that of the General Electric Company under Senate Resolution 317, adopted January 27, 1925. In its report under that resolution the commission found that there was no violation of the anti-trust law and likewise found that there was no power trust.

History of the investigation

The present utility investigation commenced in 1928. At that time the whole country was prosperous and industry was flourishing. The legend of great wealth prevailed; riches were thought to be easily acquired. The legend carried the story that some men in the industry were amassing great wealth, and the implication was that they were doing so by means of alleged manipulations. It was also charged that a few men by virtue of their wealth and position were the owners of the industry throughout the country.

In contrast, we see today the disastrous results of speculative fever, vanished paper profits, the then wealthy made poor, and companies once prosperous now barely earning sufficient to pay fixed charges. The ownership of these companies is more widely held than ever before, extending to all classes of people throughout the entire United States.

In these days of excessive taxation, superabundant and conflicting regulation, reduced rates and costly inquisitions, we are confronted with the reverse of the conditions imagined to have existed at the time this investigation was inaugurated. Few realize that since 1924 domestic electric rates throughout the country have been reduced approximately 25 per cent, and this reduction, with the tremendous loss of business, finds us in about the same plight as American industry, generally, today.

The investigation has been divided by the commission into two phases—the so-called propaganda or publicity phase and the accounting phase. With the limited time

at my command, I will confine myself to the accounting phase and dwell upon but two or three major subjects, although much could be said on the publicity phase.

The accounting investigation relates to the examination of the business transactions recorded in the books and records of the companies. Engineering and various statistical reports are also made. The investigation is critical and exhaustive. It construes and interprets the transactions as recorded in the books without relation to practical business methods of the period or economic conditions existing at the time of the recording of the entries in the books.

In many instances the criticisms made, which would be valid when applied to the private, unregulated company, lose their force completely when we consider that this industry is a highly regulated one whose growth and expansion have been largely had under legal, accounting and engineering supervision of diligent state commissions throughout the country.

I have taken the topics which seem to have occasioned the greatest amount of criticism. I desire to devote a few minutes to the questions of write-ups, "rates of return," multiplicity of companies. I believe you will agree that these three are the most important for present consideration.

Appreciation or so-called write-ups on the books

The commission has assiduously pursued this subject with the companies examined, notwithstanding the fact that the subject of valuation is entirely excluded from the Senate Resolution under which the commission is directed to proceed with the investigation. An avid press has seized upon these items and emblazoned them across its pages, causing misapprehension and alarm to countless investors in securities and to stockholders of the companies. The commission's theory is that cost figures entered upon a company's books, irrespective of time or circumstance, are sacrosanct and eternal, notwithstanding the varying economic conditions inexorably affecting values of every character of property.

The Supreme Court of the United States in Los Angeles Gas & Electric Corporation vs. Railroad Commission of California, decided last month, quoting approvingly from a prior decision (Minnesota Rate Cases, 230 U. S. 352, 434) concerning value says the judicial ascertainment of value "is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts."

Every corporation engaged in the public utility business is incorporated under state laws. An examination of the statutes of several states shows a great similarity in the provisions for evaluating the assets acquired by a corporation, although the provisions are not uniform.

All these states place the duty upon the directors of determining the value of the assets against which securities may issue. They may direct the issue of securities for cash, labor, services, property, both tangible and intangible. They must act in good faith in evaluating the species of property enumerated against which securities are to issue. The only restriction upon the directors is that they must act honestly, fairly and without fraud. In some states their courts hold that when the directors have thus fixed the value in good faith, the subsequent judgment of the court or jury as to the value of the property cannot be substituted for the good faith so exercised.

MEET AN AQUALIER—Most spectacular of Exposition fountains, this aqualier rises 60 ft. above the ground in the court of the Electrical Building.

As to the operating companies, the courts have held that the regulatory commissions are empowered to investigate, hold hearings and cause an appraisal of the property to be made to aid it in arriving at a result so that by the plain terms of the statute the regulatory commission is given authority to fix the amount of capital stock which shall be issued in payment for property acquired by the utility. In the language of the New York court, which is a clear statement of the law of the land, it must be *as of the time of the organization.*

The Federal Trade Commission determines from a pure accounting standpoint that the amount of appreciation or so-called write-up consists of (1) excess value over cost, (2) value reflected by physical appraisal where such appraisal is in excess of cost, (3) excess of value of consolidated company over book value of component companies, (4) any value reflected upon the books of the company, no matter upon what it is based, if it is actually in excess of the cash cost as reflected by earlier books or cost of a predecessor company.

The commission, by attempting to strike appreciation or so-called write-ups from the books of the company, substitutes its judgment concerning the value of the property for that fixed by the board of directors of the several companies acting within their legal duty and moral right to reflect such values upon the books of the companies. It prefers books of account to United States Supreme Court decisions, State Supreme Courts, state laws, the judgment of state regulatory bodies and boards of directors. In the main, the write-ups found by the commission were the reflection of the honest judgment of the board of directors and based on facts to support that judgment. In a few instances, however, I must state that there have been what appears to be

excessive valuations, for which I attempt no justification, because they were not made according to the law of the land. The defense of the principle of "fair value" for utility property does not require that I approve those valuations not made pursuant to established law and not supported by facts.

Write-up not over 5 per cent

Of the amount of the so-called write-ups recorded by the commission much has already been written down. Based upon the investigation to September, 1932, you would no doubt be surprised to know that the total net write-up as of that date is approximately only 5 per cent of the total investment. It would be my opinion that the total write-up in the industry as a whole, if all the companies in it were examined, would not greatly exceed a write-up of 5 per cent of the total investment in the company. I challenge any business, regulated or unregulated, public or private, to present a record equal to it. It is particularly gratifying to be able to tell you that the figure is but 5 per cent, when you realize that the period of expansion in which these write-ups occurred was a period of unprecedented inflation. But in order better to appreciate that figure and its true meaning, I would like to call your attention to a few figures for comparative purposes:

Value of Farm Land in Iowa

		Per Acre
In 1910	$2,801,974,000	$ 82.58
In 1920	6,679,021,000	199.52
Increase	$3,877,047,000 or 139 per cent	$116.94 or 142 per cent

Source: Bureau of the Census (Statistical abstract of the U. S. 1932, pages 574 and 577)

Value of New York City Real Estate (Borough of Manhattan):

In 1912	$ 5,035,485,413	
In 1922	6,058,643,144	Increase 20% over 1912
In 1932	10,154,576,653	Increase 104% over 1912

Source: New York Department of Taxes and Assessments.

Cost of Federal Government:

In 1913	$ 692,000,000	
In 1923	3,885,000,000	Increase 460% over 1912
In 1932	5,007,000,000	Increase 1186% over 1912

Source: National Industrial Conference Board.

Wages:

In 1913	Index 100	
In 1923	Index 217	Increase 117% over 1913
In 1932	Index 197	Increase 97% over 1913

Source: U. S. Bureau of Labor Statistics and National Industrial Conference Board.

In other words, while the investigation has shown a net book appreciation of 5 per cent in the electric light and power industry, there was an actual appreciation in farm lands of Iowa of 139 per cent; in New York real estate of 104 per cent; in cost of government of 1186 per cent; in wages of 97 per cent.

Bearing in mind that this investigation does not deal with economic conditions of the country as a whole, nor these companies in particular, it might not be amiss to reflect for a moment on what the country was doing in an electrical way since even the year 1924. Seven million additional homes were connected to the utility lines. One millon new stores, offices and small factories were established. The farmers benefit in the use of electricity increased six-fold. Hundreds of small communities which had had only limited electric current during part of the day or no electricity at all were given the same service as that enjoyed by the large cities. Factories no longer hesitated about locating when they needed electric service. The uniformity of electric service was so thoroughly established that, with only minor exceptions, one could move from Maine to Florida or from New Jersey to California and be assured that practically every electrical appliance could be used in the new location. By the establishment of interconnection of systems, combined with the diversification of the sources of power, interruptions and failures of current practically ceased, and yet while this increase in the use of electricity was continued and the companies were functioning to their utmost, we find that in 1924 the price of electricity to the average domestic user was 7.2 cents per kilowatt-hour. In 1932 it had declined to 5.6 cents, or by nearly 25 per cent. While the write-ups were going on the rates were coming down. *The net write-ups equal 5 per cent and the net average reduction in domestic rates since 1924 was approximately 25 per cent.* This should be conclusive proof that write-ups do not increase rates to consumers.

These accomplishments were not obtained without labor. Isn't the public entitled to know whether the laborers were worthy of their hire?

Multiplicity of companies

The investigation has emphasized the fact, previously well-known to regulatory bodies and appreciated by utility executives, that often there was the parent company, several sub-companies and several affiliated and often inactive companies. The commission infers that there are too many companies in the family tree and intimates that many of such corporations are unnecessary and may have been organized for extra-profit purposes. In very few instances does the record disclose the reason for the incorporation of the several companies at the time such companies were created.

Let us look back to conditions existing at the time these corporations were formed. You will have to do it yourselves, as the commission has not done it for you in its reports. There are valid reasons for incorporation of companies for certain necessary purposes. In fact, the need to incorporate a new company was frequently absolutely necessary if the public was to be served at all. These corporations were not organized for the mere frolic of doing so, or for the purpose of concealing profits. They were organized because a necessity existed to do something essential to the public welfare which either existing companies could not advantageously do or could not do at all. Let me cite a few instances to justify the organization of companies. You all recall the closed mortgage for a fixed amount and a definite term. In such a situation, when a demand for greater facilities arise, it was found that the old company could not obtain the necessary capital except at prohibitive rates due to the fact that the existing mortgage was for a fixed amount and its limits were already reached. What easier way was there to meet the public demand than to create a new corporation to construct the necessary power house, the transmission line, or whatever plant facility was necessary, and to mortgage the property of that new corporation. Not to have formed a corporation would often have prevented the new construction and denied the public service. Again, we find restrictive provisions in franchises which prevent existing companies from performing certain much needed functions. Consequently, a new corporation was organized. It might be that it was necessary to condemn land to acquire a right of way. A new corporation organized under a different general law with the power of eminent domain would solve the problem. Again it might be some peculiar provision in regard to

taxation. Excessive or unfair taxation laws have frequently provided the motive for forming a new corporation designed to lessen the tax burden and consequently the utility operating expenses for the true beneft of all concerned.

It might be that a company desired to take a permit from the Federal Power Commission. Because of the recapture clause, property constructed under such permits, in order to protect the whole property against the recapture clause and the costly regulatory provisions of that body, cannot always be financed under existing mortgages. Also, the commission's operating regulations pertaining to such property mights be costly and burdensome if applied to a large interconnected system. Hence, a new corporation is organized to take the permit, this company in its limited scope submitting fully and completely to the jurisdicton of the Federal Power Commission. It might be that in order to avoid interstate restrictions a company would be organized so as to minimize the extent of interstate transactions, the economies therefrom working for the benefit of the public, the stockholder and the consumer. It might be that a large plant needed by two separate and unaffiliated interests would require more financing than either existing companies alone could bear.

It might be advisable and necessary to meet certain statutory exactions which the existing company could not do except at too great a sacrifice; but a new company with small capital and restricted to a sole purpose would effect economies. The pride and the retention of the name of the original company and the consequent restriction of its territory would necessitate a new corporation to serve the additional territory. It might be advisable to separate the sale of merchandising from operating and a new company is formed. It might be that a privilege tax is exacted and existing company requiring the contribution of a certain per cent of gross to the community or to the state which can be saved to the company and consumer by the creation of a new company. Common sense would dictate the incorporation of that new company. There were formerly states which exacted double liability from the stockholders of public utilities. To facilitate financing in such situations an intermediate corporation was often created.

Multiplicity not shenanigan

Companies are organized for the purpose of transferring property, of forming mergers of existing companies and due to restrictive provisions of the laws existing companies not qualified to receive such properties. It is also in part due to lack of uniform corporation laws throughout the nation. In brief, there is no desire to create additional companies, except as there is an actual necessity for such incorporation, but we must admit some such corporations have been continued after the need therefor has ceased to exist. Because of this fact, many of the larger groups in the country are now studying the question of the number of companies in their group and exerting efforts to eliminate as many as possible from the structure. It is needless for me to state an obvious fact, but I believe that where it is possible for you to eliminate any existing corporate units, it will be your purpose and aim to do so. In stating these facts, however, I do not approve some of the complicated structures I have studied. In this day it is well that our corporate set-up be simple.

On behalf of the companies in this industry, I do resent most emphatically the innuendo that because of the existence of a multiplicity of companies there is a shenanigan going on behind the corporate mask. You men are keen and alert to things that are going on today and I know that you, as members of the Edison Electric Institute, are doing your utmost to rectify anything the appearance of which may bring criticism to the industry, whether wholly justified or not. I know too that it requires time to accomplish these ends, this due to the chaotic conditions in which we find ourselves at the hour.

It is regrettable that an investigation which has run as long as this, it now being in its sixth year, should be restricted to a book study, if you please, of the most constructive, far-seeing and efficient public serving industry. Senator Walsh stated that the investigation should cover the good in the industry as well as the bad. The resolution adopted provides that the commission shall determine "the benefits or detriment of holding companies." The chief counsel has stated: "It will be my endeavor, I do not know whether I can do it or not, to get all the facts regardless of whether they are favorable or unfavorable."

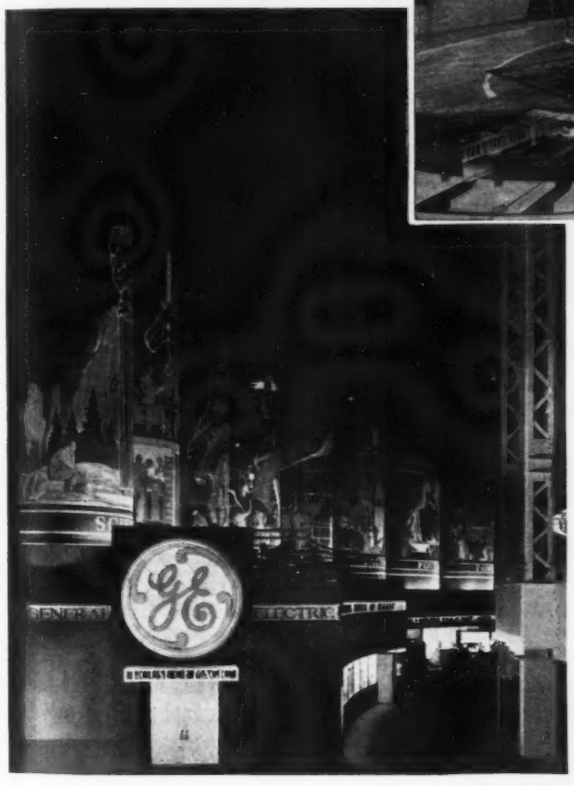
The beneficence should be explored too

With this background and with the co-operation of every company under examination, it seems to be it would be a failure of duty to complete the investigation without a true evaluation of the accomplishments of the industry to offset the technical and little understood bookkeeping and accounting criticisms and implications which have thus far emanated from the commission. It would be of great public interest to have developed the economic conditions which existed at the time many things complained of transpired. These difficulties, together with the engineering and technical accomplishments, would make a most thrilling novel in itself. An understanding of the vision, courage and fortitude of the pioneers who developed our electric utilities and thereby brought the greatest gift to the people that has ever been bestowed might replace some of the accusations with praise. The public might be interested to know why electric companies were authorized by state commissions to sell their bonds as low as 75 and to learn why the companies paid what seems excessive rates of interest for the use of money, not under normal conditions, but the accounting records alone do not tell an economic story. They are but cold figures, meaningless in contrast to the great good that was accomplished.

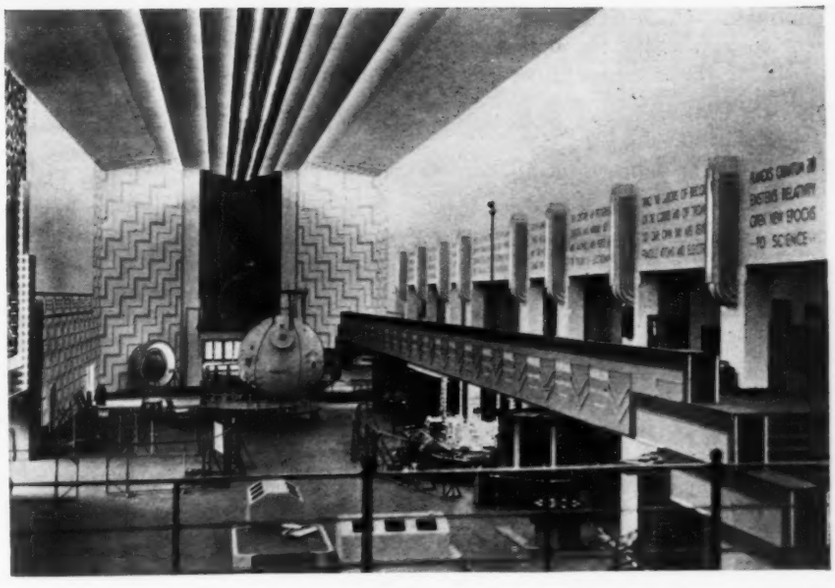
During the war period the books will not show what you men did to perfect engineering accomplishments which permitted expedition and the completion of the things necessary to win the war. The investigation does not show how much money was actually saved to the operating companies and through them, to the public, by the efficiency of the centralized engineering, accounting and managerial services of the holding companies. True, it shows how much money they received, but it does not show what they gave to the operating companies and to the public for the money so received.

It is my hope that Congress will give the commission sufficient money and personnel to finish its task, in order that a full, complete and thorough report will be before Congress on the whole subject before that body considers the recommendations of the Federal Trade Commission for legislation on our industry.

WITH MANUFACTURERS IN 1933—Strikingly different but both modern to a last split second General Electric and Westinghouse have the largest electrical manufacturing displays at the Exposition.



Technology and Science at the Century of Progress



WITHIN THE HALL OF SCIENCE—Windowless, startling in lighting and design. Here rest relics of some of man's conquests over nature, his successful bidding that she yield to his defeatless will.

Evaluating National Co-ordinated Promotional Programs

By J. E. DAVIDSON

Nebraska Power Company, Omaha, Neb.

THERE are two yardsticks by which we must take measurement in evaluating any service of the electric industry. To determine the value of the several co-operative promotional programs which our industry has fostered, one yardstick by which we measure is the benefits to our customers—in making our electric service more useful to them, in bringing more happiness and comfort into their lives, in eliminating drudgery in their homes and in their workshops.

The other yardstick is the result to the material side of our business, because, in the final analysis, our revenue must prove the success or failure of any endeavor, be it individual or co-operative. There is no general denominator which would make it possible for me to present to you actual figures of dollars gained as a result of all of these co-operative activities. In some of our undertakings, we can easily figure the increased revenue; in many instances, figuring would be only guesswork.

Better home-lighting contest (1924-1925)

The Better Home-Lighting Contest was strictly non-commercial. The lighting industry in no way during this campaign broke faith with the school authorities and the public in its pledge that this project would not have any commercial aspects. Our chief objective in this activity was to make certain that people generally, including children, would be fully aware of the benefits of proper illumination, especially preservation of eyesight, and how easy, practicable and economical it is to have proper illumination in the home.

It was hoped that 1,500 communities might be interested. Actually, 4,784 communities were organized and 40,000 persons were actively engaged on local and national committees.

Following is a quick summary of the scope of the campaign:

Population affected	50,000,000
Communities with schools co-operating	3,000
Total pieces of promotional material distributed	10,057,000
Total lighting primers distributed	2,000,000
Total essays submitted	1,000,000
Estimated value, at advertising rates, of free publicity obtained	$5,000,000

It requires no imagination to see the tangible results of the Home-Lighting Contest. You may see them in the sharp contrast of general lighting practice in most homes today, as compared with the homes of eight years ago. There are more lamps; the kilowatt consumption per home for lighting is higher. There are fewer bare lamps, more scientifically designed reflectors, less glare, less "raw" light. Unsightly cords, stretched from ceiling outlets, were not uncommon in 1925; they are rare in 1933.

Industrial lighting campaigns (1925-1926)

For a period of years following the depression of 1920 industrial business was in its golden age—the era of mass production was climbing toward its peak. The situation offered a great opportunity to the manufacturers, sellers and installers of factory-lighting equipment. It offered desirable new revenue possibilities to the central station.

Funds of $100,000 were raised and a geographic organization was set up as in the Home-Lighting Contest. Advertisements were featured in national and trade papers. Direct mail material, booklets, lectures, slides, films and newspaper ads were prepared for local use. Permanent exhibits were set up in several major cities.

The objectives of the campaign were:

1. To organize an energetic direct-selling campaign to industrial plants.
2. To form one complete and uniform plan of action.
3. To stimulate local people to sell proper industrial lighting.

"The Electric Refrigeration Bureau has just released sales figures for the first five months of the year. According to available data 380,000 refrigerators were sold between January 1 and May 31, 1933. This number, sold during the first five months of the present year, is half the number sold during the preceding twelve months. When we take into account the slow start made this year due to the bank holiday and late spring, the 1933 sales give remarkable proof of the growing buying power and increasing confidence of the public. Right now many of the larger manufacturers of refrigerators are operating at full capacity, on a 24-hour basis, and production of some plants is six to eight weeks behind orders!"

As a further stimulus—a prize contest within the industry was inaugurated and $5,000 in prizes was distributed.

Let us look at the results of the industrial lighting campaign:

Total number of factories which bought new lighting equipment	18,300
Value of reflectors sold	$2,230,000
Value of wiring accessories and contracting	$5,630,000
Total added load, kw	90,500
Total new added central station revenue as based on a single year	$4,345,000

National Food Preservation Council (1928-1929)

In the latter part of 1927 electric refrigeration was beginning to receive acceptance. However, in carrying on selling campaigns of domestic electric refrigeration, manufacturers and distributors found themselves confronted with many common obstacles. The public was colossally ignorant about food preservation. Only 40 per cent of American families employed refrigeration of any kind, and only a very few used refrigeration the year around.

A strong campaign of national and local advertising was planned and executed, culminating in September, 1929, which was set as National Food Preservation Month. The outstanding promotional feature was an essay contest in which 50,000 essays were received and $25,000 in prizes was awarded.

The campaign reduced sales resistance—it made the electric refrigerator salesman's job infinitely easier. That could be translated into dollars far in excess of the cost of the campaign, if there were only some medium of evaluation between more sales and less sales resistance.

Electric Refrigeration Bureau (1931-1933)

The bureau became operative in 1931 on a three-year program, funds for headquarters activities being supplied by the leading manufacturers of electric refrigerators. Regional and state directors were chosen and field work was immediately started to establish local bureaus.

The aims of the bureau are:

1. To harmonize the sales efforts of the industry.
2. To synchronize sales effort of all selling agencies of electric refrigerators, as hardware and furniture dealers, department and music stores and electrical dealers during definite and favorable sales seasons.
3. To carry on continuous national and local advertising plans to stimulate sales.
4. To establish a national sales quota and to work toward reaching that quota.
5. To set up local bureaus and to aid them in accomplishing their part of the bureau aims.

By the end of 1933 the manufacturers' subscriptions of more than $600,000 will have been spent for national advertising and administration purposes. More than $5,000,000 will have been invested in local promotion from funds contributed by central stations and local sales outlets.

While not listed among its objectives, a major purpose of the bureau has been to create sales for the selling agencies of the manufacturer and to increase load and revenue for central stations. A close check-up of every sale made—local, state and national—furnishes us exact information of the increased sales of this desirable load-building appliance. It is easy to ascertain the increased revenue brought about. For example, in 1931 the sales quota was set at 1,000,000 new electric refrigerators. Our records show that 960,000 were sold. In 1932 the quota was again set at 1,000,000 refrigerators, and we realized sales of 76 per cent. The present sales results for 1933 give promise of betterment over 1932. It is estimated that 1931 sales alone added $27,000,000 to the annual revenue of central stations, and the retail volume of domestic refrigerators sold reached more than $200,000,000.

Things we have learned

We have seen that a non-commercial campaign with a constructive, educational object can be successful. I believe that the success of such a campaign depends upon the objective being of unqualified advantage to the public; upon its bearing a close relation to some commercial advantage, and upon the campaign being of brief duration. On the other hand, a well and completely planned and organized co-operative campaign with a direct commercial purpose can be carried on over a long period, and its chance for success is strengthened by a long, continued effort.

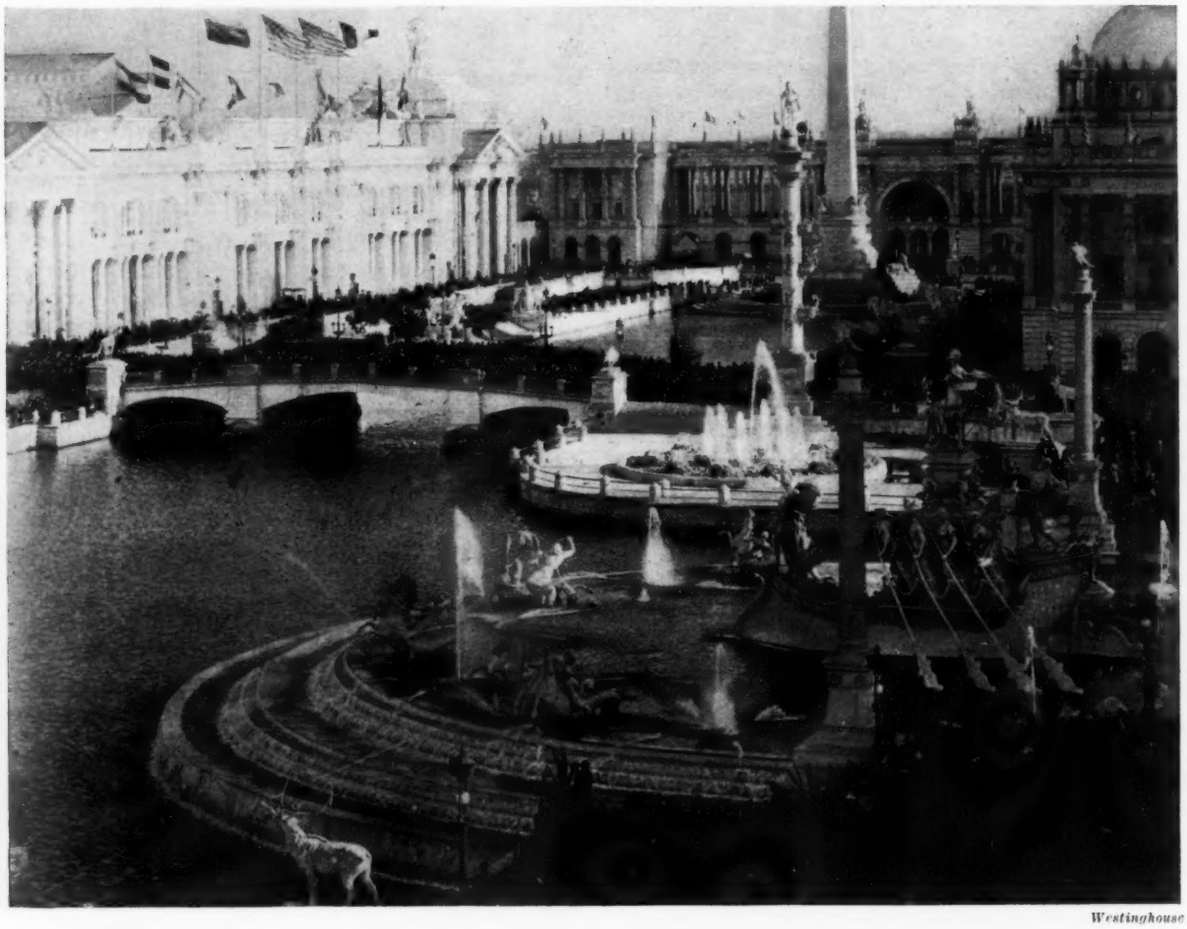
There are now 45 local electric leagues, associations, etc.; there are more than 450 local electric refrigeration bureaus and nearly a hundred local cookery councils—all a nucleus for the nation-wide co-operative organization which I am sure will come into existence in the near future. If there were one thousand of these local organizations the success of any sound, co-operative promotional plan could be assured. It is high time that we planned for co-operative sales promotion on a basis of permanent national and local organization; on a basis which will enlist the eager support of the entire electrical fraternity; on a basis that will bring new prosperity to our entire industry, and a greater electrical era to the American public.

Wide World

SKY RIDE SPANS THE LAGOON—Across the bridge or through the air, visitors at the E.E.I. convention journeyed from the Hall of Science, in the foreground, to the electrical group of buildings on Northerly Island.

World's Fair Columbian Exposition • 1893

9,960 arc lamps of approximately 2,000 cp. each
65,672 incandescent lamps, mostly 16 cp. each
World's largest searchlamp, 194,000,000 cp.

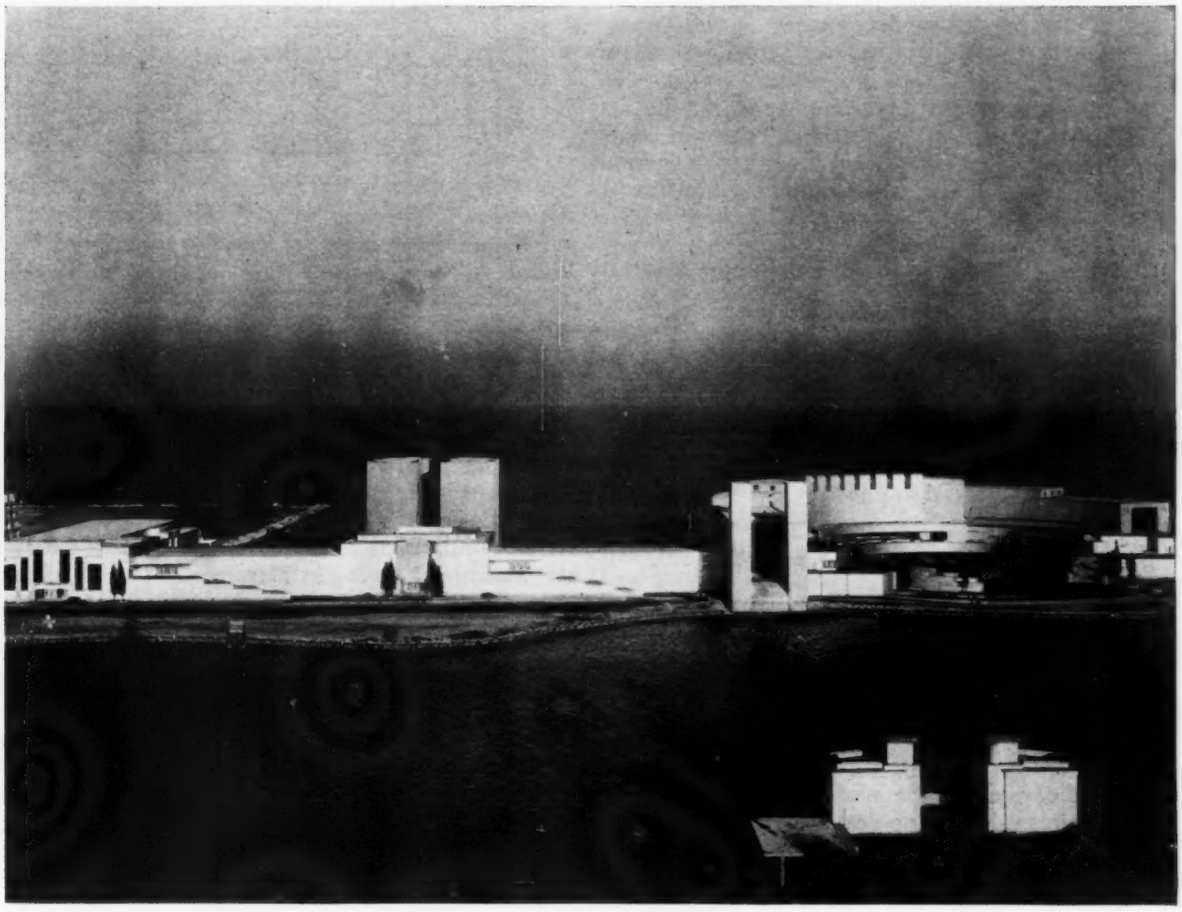


Westinghouse

Largest unified power enterprise to date, 2,804 kw., 3,585 hp. Including largest dynamo ever built for power service, 1,500 kw., driven by 2,000-hp. reciprocating engine. Palaces and the grand Italian tradition in architecture prevail. MacMonnies fountains with allegorical motifs add the final touch of elaborate wonder

1933 • Century of Progress Exposition

15 miles of gaseous tube lighting for illumination and decoration
15,000 incandescents of 10 to 3,000 watts for outdoor lighting
1,000 1,000-watt and 2,200 200-watt floodlamp projectors for outdoor floodlighting
Battery of 24 searchlights, totaling 1,920,000,000 cp., for man-made Aurora Borealis
Total outdoor lighting load, 2,100 kw.



Total load of 36,000 kw. linked with Chicago utility system
Largest generator at State Line station, 208,000 kw.

Modern in its every concept. Architecturally fusing new materials, brilliant colors generously used, light for decoration and spectacular accomplishment to tell the story of the fast pace of 1933—and of the years just ahead

Trends in Power Stations

By FRANK S. CLARK

Stone & Webster Engineering Corporation, Boston, Mass.

DURING the past ten years we have witnessed a phenomenal increase in the number and capacities of steam power stations and of their individual units. The accompanying illustration shows graphically when and where the improvements in efficiency have been made. The curves represent the averages of a number of typical stations and not individual best performances.

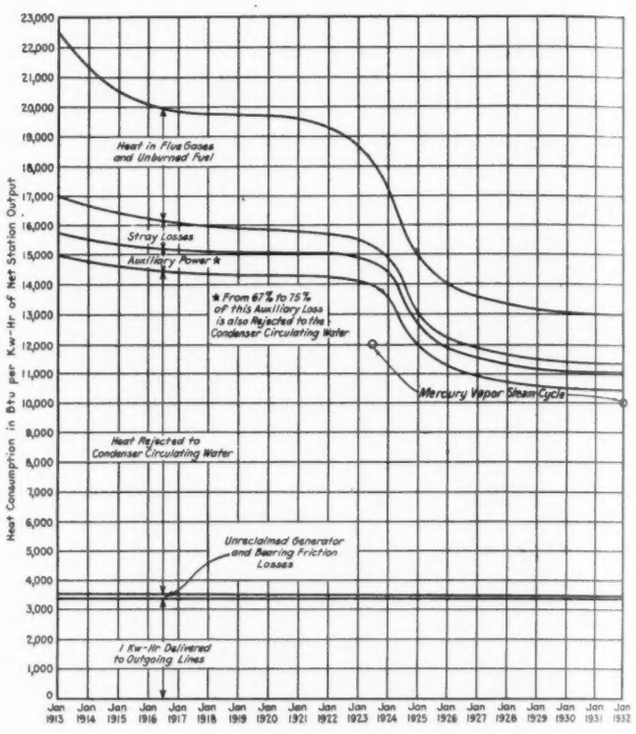
To my mind the more important trends which may aid us in our effort to install a kilowatt for a reasonable investment, to produce a kilowatt-hour at a minimum cost and to live at peace with the community are as follows:

1. Higher rates of steam generation.
2. An approach to the unit arrangement of one boiler per turbine generator.
3. Increased capacity of single-shaft turbine generators.
4. The so-called "open air" station or the omission of housing for certain items of power station equipment.
5. Simplification in electrical equipment and wiring.
6. The use of higher steam temperatures and pressures.
7. The increasing use of pulverized coal as fuel for large capacity boilers.
8. The installation of combustion equipment to utilize liquid and gaseous fuels as well as coal and to change from one fuel to another without material cost or rearrangement of furnace or fuel-burning equipment.
9. The mercury vapor-steam-electric generating station—the Diesel engine.
10. Reducing the amount of cinder and dust discharge from power station chimneys.
11. The prevention of turbine oil fires.
12. The rehabilitation of existing old power stations.
13. The supply of both steam and electric energy to an industry or group of industries.

Higher rates of steam generation

The advent of the liquid cooled furnace wall permitted greatly increased rates of heat liberation in the furnace, particularly with fuels that are burned in suspension. This has resulted in increasing the steaming capacities of individual units with consequent decrease in their unit cost. The arrangement and dimensions of the units have changed, requiring less ground or building area. Using the sectional header type boiler as an example, a few years ago 7,500 lb. of steam per header per hour was considered reasonable. One station now building is designed for 12,000 lb. per header per hour and designs have been made for steaming rates of from 15,000 lb. to 18,000 lb.

Due to the improvements in heat generating and absorbing equipment and in treatment of feedwater the serviceability of boiler room equipment is now equal to that of the turbine room. These have made feasible the so-called "unit arrangement" of one steam generating equipment to serve one turbine generator. This arrangement permits of great simplification if applied also to the relatively minor items such as piping and auxiliary equipment. Made rugged, and carefully designed, the unit arrangement will have as few troubles as, if not fewer than, a more complicated interconnected layout.



It is now common practice to place high-tension transformer, bus and switching equipment outdoors, with a consequent saving in housing. The same thing is being done with synchronous condensers and waterwheel generators. There has been increasing talk of omitting the building structure over certain mechanical equipment and some engineers are advocating the so-called "outdoor" station, in which only the sections essential to the operating functions of the plant are inclosed. One such station is now in partial operation at Schenectady. The General Electric Company and Mr. Smith, who designed the station, did not go the limit with this first installation and placed only the turbines and some portions of the boiler room equipment outdoors. This will give a good idea of the practicability of the scheme and leave the way clear to its further development as experience proves feasible.

The maintenance of such a plant and provision against freezing, particularly in cold climates, are the principal problems. Opinions of both engineers and operators differ as to the extent to which it is desirable to go along this line and I would suggest that you analyze carefully the costs of the two types of station in comparison with their advantages and disadvantages.

There is, however, a decided tendency toward the omission of as many interior walls and partitions as possible and the centralization of control equipment for both turbine and boiler room equipment.

Increasing the steam temperature permits adopting a higher steam pressure and extends the range of use of the regenerative cycle with better efficiencies and small incremental costs. When it becomes desirable to use a pressure that is beyond the safe temperature limit the addition of the more complicated reheat cycle becomes

essential, with consequent greater construction cost. Increasing the steam temperature, however, makes more feasible the use of steam instead of flue gas reheat, with consequent decrease in investment cost of this cycle.

One manufacturer has stated his readiness to build turbine generators for 1,000 deg. F. steam temperature up to 200,000 kw. capacity on one shaft. The unit would operate at an initial pressure of 1,200 lb., using the regenerative cycle without reheat.

There are operating abroad three boilers which generate steam at the so-called "critical" pressure of 3,200 lb. One of these, at Langerbrugge in Belgium, has a capacity of about 300,000 lb. of steam per hour. In this country Purdue University has installed a small boiler in which the pressures can be varied from 1,500 lb. to 3,500 lb. Experiments are being conducted on this boiler to learn more about the properties and action of steam at these extremely high pressures.

Increasing use of pulverized coal

Pulverized coal is being used for fuel in the furnaces of most of the modern large capacity boilers. The stoker installations at Delray and Hudson Avenue are the notable exceptions. There is a decided trend toward the use of the unit system with two or more mills per boiler. Some operators prefer a small amount of pulverized coal storage such as was installed at Burlington. As between the unit and the storage system, for the same character of coal there appears to be little choice as to efficiency and power consumption.

The slag-bottom furnace is being adopted more generally when the fusing temperature of the ash permits. With this furnace the vertically inclined burner as developed at State Line is coming into use.

Rapid extension of natural gas lines has made this fuel available for steam generation at greater distances from the gas fields. Fuel oil prices, especially along the seacoast, have become attractive. Equipment has been developed for the combustion of gas, fuel oil and pulverized coal in the one burner and there is a growing use of this equipment. There is an appreciable saving in initial investment cost if plant operation can be started with fuel oil or gas with provision for the installation of pulverized coal when the price differential warrants. There is an advantage also after the two fuels have been provided for in negotiating new fuel contracts.

Increased rates of fuel consumption have aggravated the situation in regard to cinder and dust discharged from power station chimneys. Agitation has abated somewhat due to decreased municipal budgets omitting provisions for "smoke inspection," but it behooves the engineer and his company to bear the subject in mind. The slag-bottom furnace with vertically inclined pulverized fuel burners will prevent from 35 to 40 per cent of the ash in the coal from leaving the furnace. To catch the remainder, the electrostatic precipitator has so far proved the most satisfactory and the most expensive to install. Both spray and film type wet eliminators are being installed also. They reduce gas temperatures sometimes below the dew point and introduce the uncertainties of corrosive action.

At high fuel-burning rates it is possible to have more cinders discharged from the stack of a stoker-fired plant than dust from a pulverized-fuel plant using the best types of eliminators in each case. Stoker cinders are larger and contain more carbon than pulverized fuel dust. This militates against the electrostatic precipitator, which, to my knowledge, has not been applied to a stoker installation. The eliminators at Hudson Avenue are the most efficient for stoker plants that have come to my attention.

Turbine oil fires

During the past year there have been three disastrous fires due to the ignition of turbine oil by contact with hot steam pipes. The danger from such fires has increased with steam temperatures. The manufacturers and utility engineers are awake to the situation and new units will have this hazard reduced to a minimum. On the 165,000-kw. turbine for Richmond station it is proposed to use a non-inflammable liquid for governor actuation and minimize the amount of lubricating oil piping and placing it remote from hot steam pipes.

On the new unit for the Potomac Electric Power Company the oil tank and coolers are in a fireproof room with all pressure pipes run inside the drain pipes, which are welded and without joints. The arrangement is considered by the manufacturers to be safe and fireproof.

The developments in steam generation which have been mentioned afford a possible means of adding to the capacity and increasing the efficiency of existing old stations by the installation of high-pressure boilers with non-condensing turbines exhausting into the present steam mains.

This has been done at the Burlington station by adding an 18,000-kw. turbine with a 650-lb., 850-deg. F. boiler, while at San Antonio a 1,400-lb. boiler and an 8,000-kw. turbine have been added. The mercury boiler and turbine at South Meadow station and at Kearny accomplish the same purpose.

One large utility is planning to remove its old 225-lb. pressure boilers and substitute 650-lb. pressure units.

Combined utility and industrial power plants

The past few years have seen a change in regard to the supplying of electric power to industries, and in order to furnish or to continue to supply such electrical requirements it is often advisable and sometimes necessary to co-operate with an industry or group of industries and furnish both their steam and electrical needs. By so doing it is frequently possible to effect a saving in investment as well as in operating cost.

This situation has been brought about by the growth of the industries, by their ability to employ highly trained men, by the obsolescence of their boiler plants and by the increase in steam temperatures and pressures which permits the generation of by-product electric power.

The operation of plants for this purpose is logically the function of the utility company, which can absorb in its system surplus electric power, and furnish such power when there is a deficiency in that produced by the steam demand. There are instances also where the industry has waste heat or products which can be sold to the utility for steam generation.

Each case is different and presents its own problems, but the situation must be such, however, that a saving will result from the combination of the two services and requirements. Then the contract made must be such that there will be an equitable division of the savings effected, all factors being considered.

Increasing Home-Lighting Sales

By R. E. FISHER

Pacific Gas & Electric Company

RESIDENTIAL lighting has for years been recognized by the industry as its most dependable and least competitive source of revenue. In those facts probably lie the secret of why this particular field has never been adequately covered or developed.

In the period of six years, through the direct sales efforts of the Pacific Gas & Electric Company and co-operating dealers whose efforts were greatly stimulated by the utility's promotional programs, it is estimated the following number of fixtures were installed:

200,000 kitchen lighting units of 150 watts replacing obsolete fixtures with an average of about 75 watts.

30,000 semi-indirect floor and table lamps of 200 watts and up for auxiliary illumination and local lighting.

60,000 semi-indirect living room, dining room and bedroom hanging fixtures of 150 and 200 watts replacing obsolete equipment which averaged less than 100 watts per fixture.

The benefits of this activity have been threefold:

1. The purchaser was benefited by an improvement in his previously inadequate lighting conditions.
2. By continually stressing lighting campaigns, there has undoubtedly been developed an educational influence which has helped to develop in the minds of the public a consciousness of improper lighting conditions.
3. The improved lighting necessitated an increase in load with resultant increased business and revenue for the utility.

We estimate that the 300,000 lighting fixture installations involved in this sustained effort represent approximately $1,000,000 in annual revenue.

The feature of past campaigns, including that of 1932, was the 150-watt direct type kitchen lighting unit. We are continuing to stress this fixture in 1933, but we estimate that we now have a saturation of 40 per cent or better with this type fixture and we are injecting into our 1933 plans a new element.

We estimate that there are on the lines of the Pacific Gas & Electric Company several million wall bracket lights using bare lamps of an average of 25 watts each. These fixtures produce neither good illumination nor good decoration and the glare caused by the bare lamps is harmful and entirely out of harmony in the home. Therefore, in addition to the 150-watt and 200-watt semi-indirect hanging fixtures, the direct units for kitchen and breakfast rooms and the portable lamps, our company is selling a bracket light converter with a 60-watt lamp. This converter consists of an open-top diffusing reflector, an adapter which fits around the bracket socket and inside the imitation candle and a parchment shade or shield. This bracket converter, consisting of three pieces —reflector, shade and 60-watt lamp—will be sold for less than $2 each and becomes a small semi-indirect unit which greatly improves this universally used unshaded bracket light. A summary of the general plan for the promotion of domestic lighting by our company in 1933 will most readily convey the objectives we are seeking.

Promoting "Mazda" lamps

We are also not overlooking the filling of empty sockets in the homes of our consumers and last year we sold direct to those consumers approximately 366,000 "Mazda" lamps which averaged in wattage 59.5 as compared to an average of less than 50 watts on dealer sales.

We are also at the present time conducting an experiment with our lighting equipment salesmen which we are very hopeful will be successful in aiding these salesmen and also in promotion of business for the dealers. This experiment is being conducted in only one division on our system and is so far working very well.

From our own experience we reach the following conclusions:

1. It takes consistent selling effort and educational work year after year to build up this load. Spasmodic sales effort accomplishes nothing.

2. It is a very difficult field to sell as it is hard to develop sales plans which will produce revenue commensurate with sales expense.

3. Because of the high revenue return from domestic lighting and the particularly large field that it presents, due to general inadequate levels of illumination found in most homes, we believe that our endeavors in this field have been mutually beneficial to both the consumer and the utility.

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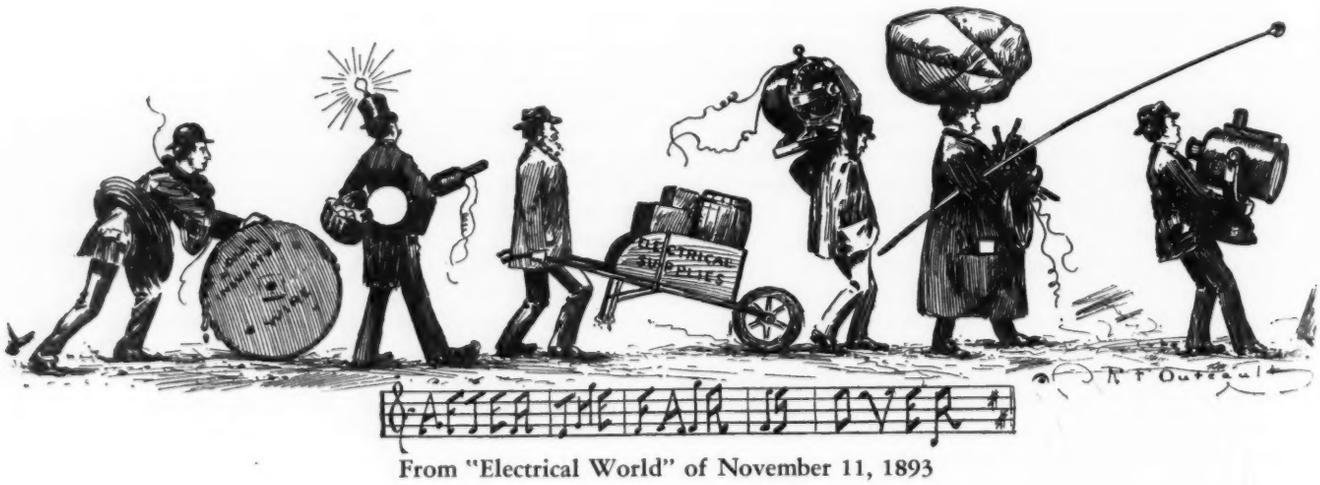

From "Electrical World" of November 11, 1893

This Business of Rates

By F. A. NEWTON
Commonwealth & Southern Corporation.

What are rates?
Rate reductions benefit loss customers.
Sales must support present rates.

WHAT I may have to say, you will understand, represents my own conclusions, based upon my experience and observation and upon my conception of the effect of present economic and political trends on future rate policies. If my observations have been faulty and if my conclusions are in error, at least they represent my own best judgment. Kindly accept them on that basis. I have fought, bled and died in past years to convince some managers that the rates of their companies should be more promotional and that voluntary revisions, particularly to promote increased use, represented a good policy in the interests of both the customers and the company. I was too progressive. Lately, some of these same managers have got religion, and like all who get religion in their later years, they have got it bad. Now I am a reactionary. As I said before, it is very confusing, but it is a good sign and I expect it will all be for the best.

It is asserted that the rates of many electric utility companies are complicated and difficult to understand. Much of this criticism is not honest criticism. It comes, to a very large degree, from those who can find nothing good in anything done by a privately owned public utility. Their criticism of the rates for lack of simplicity is but a part of a program of finding fault and of tearing down private ownership.

Nor are those in charge of rates the only ones thus criticised. It is said that you who have charge of distribution do not know what it costs to distribute electricity and that you are wasteful and extravagant. It is asserted that you who are in charge of financial policies have made serious mistakes to the great detriment of investors and ratepayers. It is charged that you who direct public policy have made a failure of public relations and that you who are in charge of the commercial end of the business have oppressed others and have fallen far short of the results you should have attained. I merely mention these charges just to make it clear that the ratemakers have not been singled out as the only ones in the business who do not know what they are doing or why they are doing it—we are all about on an equal footing in that respect in the eyes of those who seek the downfall of private ownership.

What are simple rates

Simplicity in rates is a very desirable thing. There can be no argument about that. However, when it may be carried to a point where it prevents flexibility, where it effectually discourages development of business and where it brings about unjust discrimination, then it ceases to be desirable from the standpoint of either the customer or the company.

I hope I may be pardoned if I express the earnest wish that those who sincerely and honestly urge greater simplicity in rates would get together and make up their minds as to just what they mean by simple rates and just what they want. One desires a rate easy to compute and which lends itself readily to accounting. Another wants a rate which will enable the companies to sell more appliances to a greater number of the electric customers. Still another thinks of rates solely in terms of the company's relation with the public. Others have other ideas. I find that there seems to be no accord as to just what a simple rate is or should be like.

Urges compensatory rates

The fundamental characteristics of a business cannot be ignored in making the prices for the product or service it furnishes, nor can the commercial aspects be overlooked. Assuming, of course, that a public utility must, under no circumstances, charge an excessive or unreasonable rate, and with that as the basis for all rate making, then three rules must be followed: First, the rates charged must be compensatory. They must equal the direct cost of furnishing the service and something in addition thereto for return upon the investment devoted to the service. That margin may not be the same at all times, nor may it be the same for different classes of users. However, it would seem to be a cardinal principle that the rate charged must be sufficient to meet the direct cost of the service and return something on the investment as a whole; second, the rates charged must not cause unjust discrimination either as between individuals or as between different classes of users. No class may be compelled to carry the burden of a loss incurred in serving another class. No individual customer may be put at a disadvantage as compared with other individuals in the same classification; third, the rates must get and hold the business. They must be commercially sound, they must be businesslike. Since business cannot be made to fit rates, then rates must be made to fit business as nearly as may be possible. Flexibility is therefore an essential requisite of a successful rate structure.

The first two rules are understood clearly by all who realize that ours is a regulated industry whose prices must not produce more than a fair return and which, as nearly as may be, should be based upon the cost of furnishing the service. The rule with reference to unjust discrimination is understood because unjust discrimination is illegal and also because it is bad business. The third rule, that rates must get and hold the business, means that they must be promotional. Further, it means that they must conform to the characteristics and use of the customer. Further, it means that for competitive business, and much of it is competitive, they must meet

the cost of operating the isolated plant. It means that they must recognize load factor because load factor primarily determines the competitive costs.

There are many who insist that the so-called simple or quantity rate is not in the best interests of the great mass of residence customers and does not develop business as well as other forms of rates. It does not seem to have been realized by many people outside of the business, and some inside the industry, that those rates which may not perhaps be termed "simple" were not designed for the purpose of confusing the customers. The desire was not to be technical. The underlying purpose was to make a rate which would be of the greatest advantage in developing increased use among the ordinary average run of customers.

It was realized that it was among those customers living in the five, six, seven and eight-room houses, generally without servants, that the greatest comfort and convenience could be secured with liberal use of electricity. It was at this class of customers the rate schedule was directed, not at those who may use large quantities and who probably leave their houses for one or two months in the winter and for a like period in the summer. The desire was to make a rate which would break quickly for these smaller homes and offer inducement for freer use of the service and make it possible for them to install and operate appliances. It was realized that with a given amount of reduction in revenue possible, the more that was given to the larger houses, the less there would be to give to the smaller houses and the farther out the rate would have to break.

I don't believe it can be successfully maintained that those companies having so-called "simple" rates as a rule have any better public relations, have any greater sales per customer, have any lower average rates or are earning any better return. In fact, I am inclined to the contrary belief. It is very well to say that one should have no reverence for existing practices and methods, but at the same time it has always been a proper and good ruling to hold fast to that which is good.

Reductions in maximum rates

A recent analysis of the use of electricity by the residence customers of a large operating company discloses some figures which, though typical, are startling. The company serves a large territory—48,000 square miles. Electricity is applied to nearly 500 communities having an average population of less than 4,400. Its residence rates are acknowledged to be promotional in character, going as low as 1½ cents per kilowatt-hour for cooking and for other large current-consuming appliances. Its average rate for residence use is well below the average for the country as a whole. Its rates are the same throughout the territory its serves, regardless of the size of the city or village.

The startling fact revealed by the analysis is that 73 per cent of the homes served used less than 50 kw.-hr. per month and consumed an average of only 250 kw.-hr. per year—less than 21 kw.-hr. per month. The other 27 per cent of the residence customers used an average of 2,132 kw.-hr.—more than 177 kw.-hr. per month.

The underlying purpose in the design of rate schedules for residences is to encourage and make possible the use of electricity for those many and varied uses to which it can be put for household comfort and convenience. Revisions in rates are on a sound basis only when they accomplish this purpose. The purpose is defeated if the cost of electricity for cooking, refrigeration, air conditioning and other uses must be kept high in order to take care of large losses incurred in serving those who use but a few kilowatt-hours per month and at a price less than cost. That a very large percentage of residence customers is served at a loss is a fact well known in the industry, to all state regulatory bodies and to all who have investigated the facts. How large this class of users who are served at a loss may be is indicated by the analysis for the company above mentioned.

Reductions benefit loss customers

Reductions in maximum rates benefit those customers already being served at a loss. If the rates for these unprofitable customers are made even lower, some one must carry the increased burden of loss and that some one must be the householder who endeavors to take the fullest possible advantage of the economy and convenience of electricity in his home. When these losses become so large and so burdensome that the rate charged for cooking and refrigeration, for example, must be raised above the price at which customers can afford to use these appliances, the result is harmful to the customers generally and to the utility. It is increased use per customer, and the resulting greater volume of sales, which makes possible lower costs per kilowatt-hour sold and in turn makes possible further reductions in rates. When such increased use is discouraged, if not actually prohibited, by still further reductions in the rates to unprofitable users, development in the use of electricity is prevented and many homes are deprived of the advantages of electricity.

When the facts thus pointed out are overlooked, or are deliberately ignored, then injustice results and the efforts to make rates promotional in character are effectively discouraged. As the price of electricity to customers using but a few kilowatt-hours is reduced still further, it follows that the higher blocks of the rate schedule must be extended to cover more and more kilowatt-hours so that the losses may be offset. As the higher brackets of the rate schedule are thus extended, they go beyond that point where the use of electricity for lighting ends and the use for appliances begins; they reach that point where the cost of electricity to the customer will prevent the use of the equipment he desires for his comfort and convenience.

On the other hand, if the losses incurred in serving the unprofitable customers may be confined within as narrow limits as possible, then the low price which will encourage greater use of appliances can be made available at a point where it will have the maximum effect in promoting increased use. It is essential that the low price be put at a point where the great mass of residence customers living in the five, six, seven or eight-room houses, and generally without servants, can afford to install and use those electrical devices and appliances which add so much to their comfort and convenience.

All this seems so obvious as not to need restating, but the great pressure being brought for misguided political reasons to still further reduce the rate to the customer using but a few kilowatt-hours per month requires a restatement of the facts. It is indeed a shortsighted policy, directly contrary to all sound economic principles and to all well-established commercial rules. A low rate for electricity for residence users is desirable. No one

appreciates more than does progressive utility management the reaction to low rates in the way of increased use and greater volume of sales. A policy, however, which deliberately prevents the making of low rates for those who are entitled to them by increasing the losses to the unprofitable users is not in the public interest.

Those who urge a reduction in maximum rates do so to satisfy political expediency. At the same time they realize that in order to get back the loss in revenue they must increase the use per customer, they must sell many more appliances. Therefore, they want a form of rate that will do this thing. They want a promotional rate. They want to reduce the rate at both ends, not seeming to realize that the more they take off the top, the less they can give at the bottom; that the more they do to satisfy political expediency, the less they are able to do to make the rate truly promotional.

I want to call attention to the favorable position in which those companies which have adopted promotional rates in the past find themselves. To illustrate, I have in mind a company which has a rate schedule for residences of four blocks 9, 6, 3, 2 cents, based upon load factor. That rate schedule has been in use for a number of years. Today 60 per cent of the current it sells to its residence customers is sold at the 3-cent and 2-cent blocks. Less than 20 per cent is sold at the 9-cent block. Now it is evident that a reduction in the maximum or top rate of this company, namely, the 9-cent rate, is of much less consequence than if it were selling 40 or 50 per cent at the top rate. Obviously, this company may, if it seems advisable, make a reduction in its top rate with much less serious effect on its revenue than the company which may have a 7 or 8-cent rate, which applies to probably over half the current it sells. This is worth thinking about. This is one of the advantages of such a form of rate under conditions such as exist today.

Many reductions in residence rates have been made by orders of commissions or by voluntary action on the part of the companies. There has been—there is now—great pressure to reduce the price of electricity to domestic users. The reason for this is obvious. There are 20,000,000 homes using electric service. The large number of voters here represented has a great appeal to politicians.

Residential lower than retail commercial

The constant reduction in rates to household users has brought about a situation which many do not fully realize, namely, that in many sections residence rates are today lower than retail commercial lighting rates. I am not speaking of the individual store, as compared with the individual home. There are residences entitled to lower rates than some retail commercial customers and there are also stores clearly entitled to rates lower than residences. I am speaking of the residences as a class and the retail commercial customers as a class. I have heard the argument that this situation is as it should be from the standpoint of the cost of the service as well as from the standpoint of the value of the service to the

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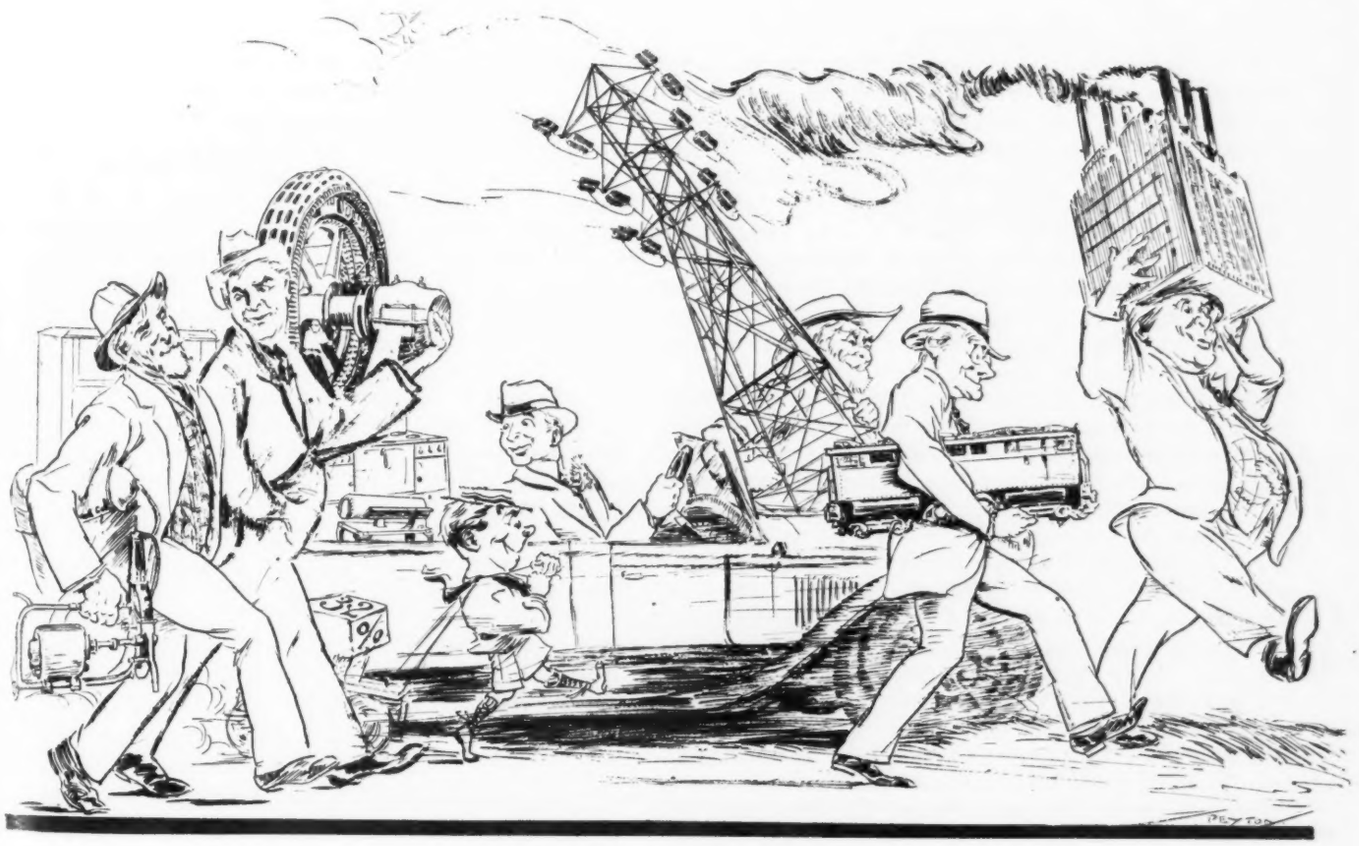

Happy days are here again

customer. I confess I have been unable to follow this contention. I have yet to see the facts which support it. There seems to have been considerable speciousness about these arguments. They represent, I believe, a justification after a fact—an effort to explain a situation which has arisen because of political pressure and the desire to placate a large class of users and not because of economic reasons.

The argument has been advanced that lower rates for residences than for retail commercial establishments is sound from the commercial or business-getting standpoint. It is asserted that the field for the development and use of electricity is greater in residences than in commercial establishments. It must be granted that there is a much greater number of residence users and a wider field, but when one considers the opportunities in stores, restaurants, theaters, etc., for air conditioning, sign lighting, refrigeration, window lighting and better interior illumination, the possibilities of this class of business loom pretty large. It should also be noted that increased sales of this character to this class of users will ordinarily require little in the way of added investment in distribution facilities.

I am convinced that in the desire to reduce residence rates the companies and commissions have not given due recognition to the retail commercial customers, who are not strong politically and who are not large enough to offer competition of isolated plants, and have failed to appreciate the reaction of this class of users to more promotional rates. Especially at this time, when it seems quite evident that industrial conditions are improving, does it seem desirable to give more consideration to the possibilities in the retail commercial business and more attention to the rates for this class of business.

Surplus capacity

A consideration of future rate policies must recognize the existence of an unusual surplus capacity in generating facilities. A large additional volume of electricity can be sold by most, if not all, companies with no increase in investment and therefore with no added fixed charges. Present generating capacities will absorb a materially greater power demand. This means that large power loads are very desirable under present conditions—that the cost of handling such business will be confined largely for several years, perhaps, to production costs. How long this situation will continue no one knows.

New industries will undoubtedly arise—new processes will be found which will require power in large volume. Industry generally may come back faster than now appears likely. In any event, there is now a very pressing desire—necessity, if you please—to sell more electricity and to load up idle equipment. It will be argued that a price which has but a narrow margin over and above bare production costs will be remunerative to the light and company.

Sooner or later, however, the surplus capacity will be absorbed. New equipment and new investments will be necessary, bringing added fixed charges. It will then be necessary to see that the power loads added at low rates take up their share of the fixed charges. It must be remembered that this is a regulated business. It is true that regulatory commissions concern themselves but little with the rates for large power customers, except to see that they may not be so low as to throw a burden on other users. Large industrial establishments purchasing power do not need the protection of the commission. They are amply able to take care of themselves. They buy power because it pays to do so. Unjust discrimination, however, is prohibited by law. It is the duty of the commissions to remove unjust discrimination as between large power users as well as between small light and power customers.

In view of these facts it would seem that certain rules might be offered for your consideration in connection with efforts to expand power sales and take on loads at this time at very low rates: First, that the company should reserve the right to withdraw low power rates offered under present conditions when these conditions cease and when it becomes necessary to provide greater generating and transmission capacities; second, that whatever rate may be made it shall be available to any and every customer, either existing or prospective, whose character of use entitles him to such rate.

Misleading averages

I have previously referred to a company which has an average consumption per residence customer of 762 kw.-hr. per year. It was noted that 73 per cent of its residence customers used less than 50 kw.-hr. per month and consumed an average of 250 kw.-hr. per year, or less than 21 kw.-hr. per month. It was noted that the other 27 per cent of the customers used an average of 2,132 kw.-hr. per year, or 177 kw.-hr. per month. It is at once evident that the company's high average consumption is due chiefly to a very large, in fact, one might almost say, excessive, use by a small proportion of its customers. If one looked at this company's average consumption per customer, namely, 762 kw. per year, without going further, one might be misled by the obvious figures.

Another company which has an average of less than 650 kw.-hr. per residence customer has, however, a larger consumption per customer for the majority of its customers. While it has 650 kw.-hr. average per customer as compared with the other company's 762 kw-hr., those of its customers who use less than 50 kw.-hr. per month use an average of 30 kw.-hr., as compared with less than 21 kw.-hr. for the first company. Its lower average per customer per year is due to the fact that it does not have such large use by a small percentage. Or, if I may put it another way, the first company has a higher average use per customer, the second company has a higher use by the average customer. I think it will generally be found that those companies having particularly high average use per customer have a small proportion of their customers using very large amounts, thus pulling up the average.

From a rate-making standpoint, I would say that the company which has 73 per cent of its customers using less than 21 kw.-hr. per month should have its rates revised so that they break a little quicker so that the lower blocks of the rates come nearer to the average use and so that the promotional effect begins where it will get the best results. I would further say, from a rate-making standpoint, that its rate for the large user is evidently low enough. At the same time it can be said that the rates of the second company do not go low enough to secure that very large use by those customers able to and ready to use the service thus freely.

Companies have experienced difficulty in these times

in applying power rates with a demand charge. Power customers naturally are trying to cut their costs, and while, as a general proposition, the cost of power is a very small part of the cost of manufacturing most products, the power bill attracts attention because in many cases it runs into a good many dollars. The customers' attention is directed to the demand charge part of the rate and this is generally the target of his complaint.

Must meet competition

It is unnecessary, of course, to repeat that power rates are competitive. They must meet the competition of the isolated plants. When that day comes, when this industry and our competitor, the isolated plant, can find a way to eliminate or suspend fixed charges, then fixed charges will not be a necessary part of the rate charged for power service. But until that day comes fixed charges will be a part of the cost of furnishing service, whether it be furnished by the utility or by a separate isolated plant. There has been some demand for a power rate which not only eliminates demand charges but is so designed that during periods of low manufacturing production the cost of power will be in proportion to the amount of the customer's production and that during period of high industrial activity the power customer will pay a higher rate. In brief, this idea is that of an equalization reserve. During periods of industrial activity there shall be set up a reserve accumulated by higher power rates so that the utilities may charge lower rates during the period of depression, equalizing their earnings by the reserve accumulated during good times.

I think there are two chief objections to this idea. The first, and I say this with all fairness to the usual manufacturer, is that he will not pay that higher rate during the period of industrial activity. If he finds the rate higher at that time than he can produce the power for himself, I am very much afraid he will forget about the arrangement for the equalization reserve and put in his own plant. You will have to agree with me that there would be extreme danger of that being done. I think you will have to agree with me that it would be unsafe to assume that it would be done and proceed on that assumption at this time.

The second objection to the plan is that I doubt that the state regulatory commission would approve the idea. I am afraid it would object to it during periods of industrial depression as throwing the burden on the residence customer. I am also afraid that it would have many complaints during the period of industrial activity from the power customers themselves. You may gather from what I have said that I haven't much faith in the idea.

Alternatives available

Now it would be very easy to make a simple rate for power customers and with no demand charges. All one has to do is to determine the average revenue per kilowatt-hour received from all power customers—say 2½ cents per kilowatt-hour—and charge that rate for all power sold. The obvious result of such a simple rate would be, first, that a large percentage of power customers would be served at less than cost and at less than the value of the service to them. On the other hand, the rate for the large power users would be higher than the cost of serving them and higher than they could serve themselves and the business would be lost on the basis of price.

The next suggestion to meet the objection above outlined is to have a simple quantity rate beginning at the top of whatever you like, 8, 9 or 10 cents per kilowatt-hour and going down to a rate low enough to secure and hold the large power users. I can hear the objection to that right away. Namely, that quantity alone does not determine either the cost to the customer of serving himself or the cost to the company of serving the customer. Such a form of rate, with no regard to load factor, would be prohibitive against many customers, not large in point of demand, but having extremely good load factor and constituting very desirable business.

Wright rate not feasible

It will be said that if the simple quantity rate will not work, let us make a rate without any demand charge, but based upon load factor with blocks based upon hours' use of the customer's demand. I can hear some objections to that, too. It will be pointed out that the customer with a demand of 5,000 kw. can install and operate a plant with great efficiency and at lower fixed charges per unit of demand than the customer who has a demand of, say, 100 hp. Every successful rate structure must recognize this situation.

Any power rate structure to be successful must be flexible. It must meet changing conditions, it must meet the cost of the isolated plants, some of which operate under peculiar characteristics. Simple rates might be secured in this way. We might determine what rate per kilowatt-hour which would successfully compete with the isolated plant for each class of load. That might mean a different rate for each different industry, one for the cement mills, one for the textile manufacturer, another for the automobile manufacturer, another for the steel mills, another for the tire maker, and so on and so on—in other words, class rates. Where that thing might end no one can guess. Perhaps if you are familiar with railroad freight tariffs you may get some idea of what class rates may lead to.

Uniformity of rates

If I were asked to point out another trend in rates today, I would say that there is a great tendency toward uniformity of rate schedules for the territory served by the single company. That practice has gained much ground in recent years. It has advantages socially, economically and politically, and I doubt if any company which has adopted that practice would voluntarily depart from it. I believe that the pressure brought to bear by the different communities and by the general public will compel such uniform rate schedules sooner or later.

One thing is clear, if rates for residence are going to keep on going down and down and taxes keep on going up and up, then sales must be increased so that net revenues may be maintained or bettered.

This means that the customers must be sold more lighting and more appliances. Without offering any suggestion as to how this increased lighting and how the appliances are to be sold, the unavoidable fact remains that they must be sold and the utilities must be very aggressive in this respect. In my opinion this constitutes the real problem before the electric utility industry today.

Lighting Fields to Explore —With Profit

By MERRILL E. SKINNER
Niagara Hudson Power Corporation, Buffalo, N. Y.

IN AN effort to get some facts as to what was going on in the homes of our customers and to analyze more clearly the reasons for the declining residence consumption a survey was made by one of the operating units of the Niagara Hudson System, and I imagine the results attained from this survey would be duplicated in almost any other community in the country. A number of accounts which showed a decreased consumption against the same month a year ago were selected. They were spread throughout the entire community, so that they represented a cross-section of all classes of homes and incomes. Interviewers were sent out, armed with a complete history of the current consumption, to find out why the customer's use of service had diminished. Some of the questions which they asked these customers and the proportion of affirmative answers were as follows:

	Per Cent
Was reduction in use due to a planned curtailment of expenses?	Yes 54.7
Has wattage of bulbs been reduced?	Yes 20.
Has number of lamps been reduced?	Yes 15.7
Were electric rates the cause of lesser use?	Yes 7.6
Does customer know amount of money saved?	Yes 29.3
Does customer know of 1½-cent block in the rate and how little it costs for service?	Yes 71.7

Of the customers contacted, 14.3 per cent were then without work and 6 per cent were on part time. No record, of course, was obtained as to the amount by which income had been curtailed in other cases.

Now it is interesting to note that almost half of these customers were making no conscious attempt to curtail expenses by reduced use of service. Only a relatively small percentage were consciously reducing the wattage of lamp bulbs or reducing their number. The electric rate seemed to be a minor factor and a surprisingly large percentage were aware of the 1½-cent follow-on step in their rate schedule. Nevertheless, all of these customers showed marked decreases in consumption. We made an attempt to find out to what extent the use of specific appliances had been discontinued and we found a substantial number which had been temporarily or permanently retired from service. The appliances which had been removed in the order of the frequency with which they were mentioned were, first, heaters; second, toasters; third, washers; fourth, refrigerators; fifth, radio. This was in part, of course, explained by the greater frequency with which the individual appliance was encountered on account of existing saturation, but it seems to show that many customers who have purchased appliances have not been fully sold on the advantages of their use.

A field experiment

Last fall conferences with lighting experts at Nela Park led to a field experiment in Utica, N. Y., to find a solution for these questions. The purpose of the experiment was:

1. To analyze the possibility of making home-lighting sales today.
2. To determine whether eyesight (and energy) conservation would be an appealing and successful basis on which to sell the homekeeper better lighting.
3. To prove whether an intensive sales effort on home lighting could be made a profitable activity for the central station.
4. To secure the reaction of co-operating dealers.
5. To discover the reaction of the customer to this new approach.

The city of Utica was selected for the project for several reasons, most of them taking root in the aim to make every condition of the experiment such that the validity of its results would be unassailable. Thirty-five full days were spent making direct contacts and calls in individual homes, calls aimed to *sell* better lighting; i.e., to interest the homemaker sufficiently in the eye-conserving value and desirability of higher levels of well-controlled light—at least in the living room—so that she would install the recommended wattages and make such changes in equipment as were necessary. In these 35 days 85 separate homes were visited. These 85 homes represented practically all types of medium class and better homes.

Of course, it takes more than conversation really to sell lighting, and demonstration was the most important part of the home call. A small, compact suitcase was carried, containing such demonstration material as would do a comparable job for the home to that of the well-known Weston kit in the commercial field. A series of photographs illustrating a proper solution of the most common home-lighting problems proved of particular interest to most women. Small shades of several types served to convince the woman that she must have shades

on all bare lamp bulbs. An assortment of all the standard bulbs for home use made it possible to show startling contrasts between the right and wrong lamp bulbs.

Possibility of home-lighting sales today

One hundred per cent of the 85 homes visited needed additional lighting. A survey of the lighting conditions existing in the 85 homes visited confirms conditions found in the home-lighting survey conducted nationally more than ten years ago, namely, that all homes were about "half lighted." A number of the homes investigated in Utica were better than half lighted, but it is significant that *every one* without exception *needed* additional lighting, and not for mere luxury or purely decorative effect, but simply in order to bring that home up to those modern standards founded on the minimum requirements of the new Science of Seeing. Even in one home of very moderate size, where there was an outstanding consciousness and appreciation of the value of electricity as evidenced by an average monthly consumption of 475 kw.-hr., there was still need for additional lighting!

Seventy-seven of the homemakers—or 91 per cent—proved to be "live" prospects, interested enough so that actual recommendations were made on the first call. In the eight homes in which definite recommendations were *not* made, only in one instance was this due to lack of interest. In the remaining seven circumstances made it seem more tactful to let the matter rest until a future time when economic conditions changed.

To what extent additional lighting is needed may be judged only in part from the recommendations actually made in these 77 homes. A total of 34,775 additional watts was suggested, averaging 451 watts per home. It must be borne in mind that this figure does not represent the total additional watts possible or even needed, but only such additions as seemed expedient to suggest on the first call. Furthermore, 62 per cent of these additional watts recommended were in but a single room—the living room.

Value of eyesight conservation as the sales appeal

The time element made it impossible to check back on every home visited, but 62 per cent of the 85 homes contacted, or 53 of them, were checked. Of these, 47 had already effected changes. Since it is a fact that the people called upon a second time are representative of the 77 real prospects, the percentage of total acceptance (to the extent of making some changes) would very likely be as high as the percentage of those cases actually investigated, and it accordingly seems fair to use this figure. The additional watts actually on the lines in the 47 homes which made some changes averaged 220, which would show 15,100 watts of increased connected load for the entire undertaking. This figure is based, as stated, upon the assumption that all 77 of the prospects accepted the ideas advanced in the same proportion as in those homes where an actual check was made. The 15,100 watts represent 43 per cent of the wattage increase originally recommended on the first call. In addition to the completely ascertained results, 8,745 watts were, at the conclusion of the experiment, in the process of being added.

The seven weeks' activity in Utica, extended for a full working year, should result in a conservatively estimated increase in revenue of slightly more than $4,100 —a figure certainly in excess of one person's expense.

In addition, as has been noted, there were 8,745 watts in the process of being added, but since it was not on the lines at the conclusion of the experiment, it is not included in the $4,100 figure used above. Some of this additional usage will not require further effort, while some will probably need another call.

Dealer interest and co-operation

Even during this short experiment twelve out of the nineteen dealers who were approached concerning the project made at least one sale due directly to this activity, and in the case of those who made several sales there was a decided change of attitude in favor of closer co-operation. Before any direct contacts with the homemaker were even sought a call was made upon five electrical dealers, two fixture dealers, three furniture dealers, two department store lamp departments, three gift shops and four decorators in order to acquaint them with the plan and to seek their interest and their co-operation to the extent of supplying the kind and quality of merchandise needed for carrying out the lighting recommendations made in the homes. In most cases the interest was lukewarm, but as soon as women actually came to make purchases, the attitude changed, and in several instances exceptional co-operative interest was displayed. For example, one furniture dealer, who sold 2½ gross of small candle shades and three dozen 18-in. and bridge shades, as well as a number of lamps, due to this activity, sought direct help in reordering.

Quantity production methods needed

Of course, the problem is how to make enough of those contacts to produce tangible results and to do so without the expenditure exceeding the value of the operation. In other words, we must find some quantity production methods.

We, all of us, have sales employees calling on our residence customers and it would seem that if we could reduce the elements of home lighting to simple terms so that they could be quickly absorbed by these sales representatives it should be possible through them to get the lighting story over to a large group of our customers at little expense. Working from this premise, a simple approach was developed for the use of outside salesmen or district representatives. The eyesight conservation appeal was used, and in order to make it more effective, it was aimed specifically at protecting the eyesight of the children in the home.

No attempt was made to go into the elaborate details of a complete home-lighting recommendation, but simply to develop the fudamentals of how correctly to use light for reading. The appeal was aimed to convince the customer that he should supply a suitable reading lamp at every reading location in the living room of the home and that bulbs used in these lamps should be of proper wattage.

I have purposely centered upon the residence field because this seems to be the one in which the problems are most difficult. We have already had called to our attention, through the trade press and through industry committee meetings, the sales technique developed by the American Gas & Electric Company, which applied these same principles to the commercial field. The results of these operations have been given wide publicity and I feel that it is not necessary for me to repeat

them here. As to the industrial field, is there any reason why these same principles cannot be applied with equal effectiveness?

We have new tools of salesmanship, consisting of a more forceful approach and a more compelling appeal, with which to persuade our customers to use more of our service. Those who have faced the facts in regard to their lighting load and have determined to do something about it are getting results. They are pegging decreased consumption and, in spite of conditions as they have existed during the past winter, are in many cases securing increased load and consumption. Probably more important than either of these results, they are reaping a harvest of good will from customers who have sincerely appreciated the effort made to show them how to use light properly.

International Electrical Congress · 1893
Official Delegates

DURING THE WORLD'S FAIR in 1893 an International Electrical Congress met in Chicago to which the notable pioneers shown below were delegates. Legendary indeed are most of them now. Not all became immortals, but they were then laying the foundations of a new and struggling art which was to remake the world.

BUDDE SIEMENS LEDUC NICHOLS WANNEMAN THURY
DE LA TOUANNE S. P. THOMPSON
SCHRAEDER HOSPITALIER
LUMMER VIOLLE PALAZ CARHART
PREECE ROWLAND
FERRARIS AYRTON MASCART E. THOMSON
VON HELMHOLZ MENDENHALL